

SUGAR MANUAL

1971



Hawaiian Sugar Planters Association

ERRATA

HSPA SUGAR MANUAL 1971

- Page 1 Mr. Boyd MacNaughton, member of the HSPA Executive Committee, is Chairman of the Finance Committee for the Board of Directors, C. Brewer & Co., Ltd., not President.
- Pages 8 & 9 In the table, "Cane Sugar: Production In Hawaii, 1908-1970", the figure for tons sugar per acre (second column) in 1970, should be 10.21, not 11.11.

HAWAIIAN SUGAR PLANTERS' ASSOCIATION

ADDENDUM

HSPA SUGAR MANUAL 1971

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HSPA SUGAR MANUAL 1971

PUBLISHED BY

Hawaiian Sugar Planters' Association

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HAWAIIAN SUGAR COMPANIES

ISLAND OF KAUAI

GAY & ROBINSON

Makaweli, Kauai 96769
Phone: 338-8233

GROVE FARM CO., INC.

L. M. Van Dreser, *Mgr.*
Puhii, Kauai 96766
Phone: 245-2341; 245-2711

KEKAHA SUGAR CO., LTD.

W. J. Baldwin, *Mgr.*
Kekaha, Kauai 96752
Phone: 337-1472

KILAUEA SUGAR CO., LTD.*

Dale Anderson, *Acting Mgr.*
Kilauea, Kauai 96754
Phone: 828-1430; 828-1421

THE LIHUE PLANTATION COMPANY, LTD.

D. T. Silver, *Mgr.*
Lihue, Kauai 96766
Phone: 245-2112

McBRYDE SUGAR CO., LTD.

P. F. Conrad, *Ops. Mgr.*
Eleele, Kauai 96705
Phone: 335-3121

OLOKELE SUGAR CO., LTD.

D. J. Martin, *Mgr.*
Kaumakani, Kauai 96747
Phone: 335-3145

ISLAND OF OAHU

KAHUKU PLANTATION CO.*

C. D. Christophersen, *Mgr.*
Kahuku, Oahu 96731
Phone: 293-5303

OAHU SUGAR CO., LTD.

J. T. Humme, *Mgr.*
Waipahu, Oahu 96797
Phone: 677-3357

WAIALUA SUGAR CO., INC.

W. W. Paty, Jr., *Mgr.*
Waialua, Oahu 96791
Phone: 637-4520

ISLAND OF MAUI

HAWAIIAN COMMERCIAL & SUGAR COMPANY

W. S. Haines, *Ops. Mgr.*
Puunene, Maui 96784
Phone: 877-0081

PIONEER MILL CO., LTD.

J. W. Siemer, *Mgr.*
• Lahaina, Maui 96761
Phone: 661-0061

WAILUKU SUGAR COMPANY

C. G. Street, Jr., *Mgr.*
Wailuku, Maui 96793
Phone: 244-3941

ISLAND OF HAWAII

HAMAKUA MILL COMPANY

L. A. Thevenin, *Mgr.*
Paauilo, Hawaii 96776
Phone: 776-1216

HAWAIIAN AGRICULTURAL COMPANY

E. A. Smith, *Mgr.*
Pahala, Hawaii 96777
Phone: 928-8311

HONOKAA SUGAR COMPANY

R. M. Frazier, *Mgr.*
Haina, Hawaii 96709
Phone: 775-0640

HUTCHINSON SUGAR CO., LTD.

J. W. Hewetson, *Mgr.*
Naalehu, Hawaii 96772
Phone: 929-7311

KOHALA SUGAR COMPANY**

A. C. Stearns, *Mgr.*
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Phone: 889-6322

LAUPAHOEHOE SUGAR CO.

R. A. N. Bruce, *Mgr.*
Papaaloa, Hawaii 96780
Phone: 962-6314; 962-6244

MAUNA KEA SUGAR COMPANY, INC.

J. F. Cykler, *Acting Mgr.*
Hilo, Hawaii 96720
Phone: 935-0855

PAAUHAU SUGAR CO., LTD.

F. C. Schattauer, *Mgr.*
Paauhau, Hawaii 96775
Phone: 775-7221

PEPEEKEO SUGAR COMPANY

H. M. Gomez, *Mgr.*
Pepeekeo, Hawaii 96783
Phone: 963-6211

PUNA SUGAR CO., LTD.

David P. Young, *Mgr.*
Keaau, Hawaii 96749
Phone: 966-9270

* Terminating Operations Effective Dec. 31, 1971.
** Terminating Operations Effective Dec. 31, 1973.

Part I

HAWAII'S SUGAR INDUSTRY

COMMERCE & INDUSTRY

Historically, Hawaii is an agricultural economy. While tourism and military expenditures in recent years have grown extensively, agriculture remains the state's most stable producer of income.

Sugar is Hawaii's most important agricultural industry. It created nearly \$200,000,000 in income during 1970. Pineapple is second largest. Estimated value of canned pineapple products is about \$130 million annually.

Diversified farming—all other Hawaiian agricultural production—has a value of about \$58 million annually.

Because Hawaii must import most of her food and other essentials from the U.S. Mainland, the out-of-state sale of sugar and canned pineapple products are important factors in the state's balance of trade.

SUGAR INDUSTRY

Hawaii's sugar industry is recognized as the world's leader in sugar technology and production.

The first attempt to make sugar in Hawaii was in 1802. It was not until 1835, however, that the first successful sugar company was established. Fields of that firm are still producing today, more than 136 years later.

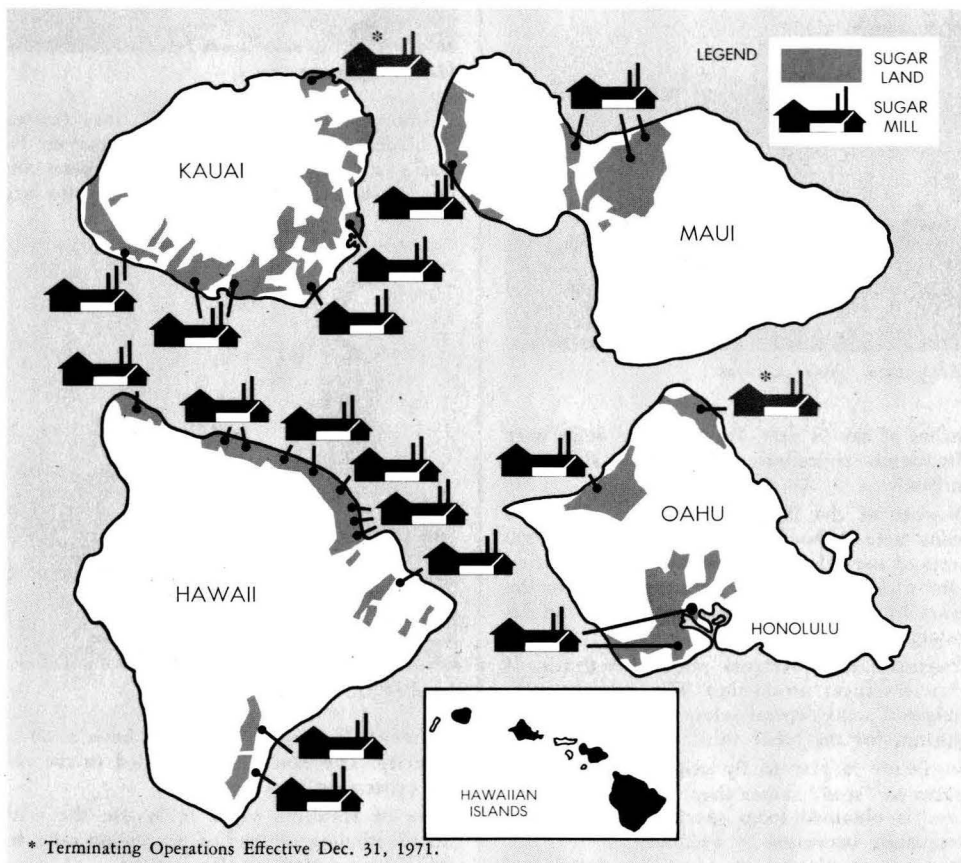
After a slow start, production reached 100,000 tons a year in 1886; 250,000 tons in 1897; and 500,000 tons in 1908. But it was not until the 1930-31 season that production reached 1 million tons for the first time. Since then, 1 million tons annual production has been exceeded 20 times, including the past 10 consecutive years.

CURRENT PRODUCTION

In 1970, 1,162,071 tons of raw sugar were produced.

Value of 1970 production to the state economy from raw sugar and molasses production and

SUGARCANE PRODUCING AREAS, SUGAR MILL LOCATIONS, HAWAIIAN ISLANDS



from Sugar Act compliance payments is an estimated \$198 million.

Sugar is produced on four of Hawaii's eight major islands—Hawaii, Maui, Oahu and Kauai — by 23 sugar companies employing about 10,600 year-round employees. Annual payroll is more than \$75 million including the cost of employee benefits.

GROWING SUGAR IN HAWAII

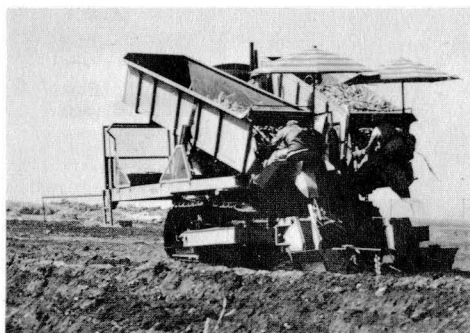
Hawaii's sugar industry is unique in a number of ways. It produces more sugar per acre than any other area in the world. It is the only area where the average age of the cane is two years at time of harvest.

Hawaii's sugar industry is the most highly mechanized in the world. Hand labor has been virtually eliminated.

It is the world's technological leader.

The climate of Hawaii varies considerably. Tropic rain forests can be found within a few miles of desert conditions.

On some sugar company lands average rainfall is as little as 15 inches a year. On others as high as 212 inches a year. One sugar company's mountain fields receive an average of 133



Mechanical planter at work.

inches of rain a year. Its low-lying fields near the ocean shoreline receive only about 20 inches.

Because of the lack of adequate rainfall in many areas, about half of Hawaii's 239,000 acres of sugar lands are irrigated. An estimated total of \$50 million has been invested over the years by Hawaii's sugar companies in the development of irrigation systems.

Irrigated land produces about two-thirds of Hawaii's sugar production. The remaining unirrigated areas depend solely upon rainfall and account for the other third.

Sugarcane is planted by using pieces of cane stalks as "seed" rather than actual seed. Seedcane is obtained from special plots of cane, frequently harvested by machine.

Seedcane is planted by specially-developed

machines which plant two or more rows, simultaneously burying each seedpiece under one-to-three-inches of soil.

About half of Hawaii's sugar lands are harvested each year. When sugarcane is harvested, it grows again from the old root system (ratoon crops) without planting again after each harvest. From two to four ratoon crops are obtained from each original planting.



Harvesting sugarcane.

Bulldozers equipped with push tines (instead of blades) are most often used to harvest Hawaii's sugarcane. They push the cane into windrows. Grab-cranes load the cane into large



Loading harvested sugarcane.

tractor-trailers, some of which have a 60-ton capacity. The cane is then hauled to the mill for processing into raw sugar.

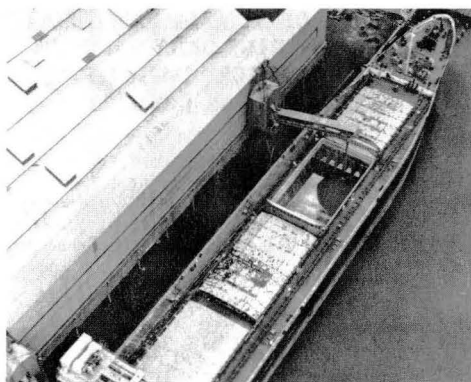
Most of Hawaii's sugar mills use the traditional grinding method of processing cane, but the diffusion method also is used.

RAW SUGAR GOES TO U.S. MAINLAND

Approximately 97 percent of all Hawaiian raw sugar production is shipped to the U.S. Mainland for refining. About three percent is processed in a local refinery, largely for Hawaiian consumption.

All of Hawaii's raw sugar is transported in bulk form. Hawaii's 23 sugar companies use five bulk storage and loading plants located on the four sugar islands. Location and year in which the bulk storage plants began operation are: Kahului, Maui—1942; Hilo, Hawaii—1949; Nawiliwili, Kauai—1950; Honolulu—1955; and, Kawaihae, Hawaii—1959.

In 1970, shipment of raw sugar from Hawaii to the mainland accounted for 75 vessel sailings.



Bulk shipping Hawaiian raw sugar.

HAWAIIAN SUGAR COMPANIES BY ISLANDS, WITH ACREAGE AND PRODUCTION FOR 1970 (RAW VALUE)

	TOTAL CANELAND ACREAGE	ACREAGE HARVESTED	PRODUCTION (SHORT TONS)
HAWAII			
Hamakua Mill Co.	8,214	3,784	33,396
Hawaiian Agricultural Co.	10,658	3,640	42,887
Honokaa Sugar Co.	9,402	4,235	40,949
Hutchinson Sugar Co.	8,890	3,733	32,930
Kohala Sugar Co.	14,054	6,597	44,569
Laupahoe Sugar Co.	10,322	4,610	44,550
Mauna Kea Sugar Co.	12,881	6,305	64,930
Paaupau Sugar Co.	6,276	2,520	26,874
Pepee Sugar Co.	13,099	6,351	59,261
Puna Sugar Co.	13,737	5,026	40,788
TOTAL HAWAII	107,533	46,801	431,134
KAUAI			
Gay & Robinson	2,571	1,280	16,998
Grove Farm Co., Inc.	10,130	4,955	35,066
Kekaha Sugar Co., Ltd.	7,880	3,842	50,918
Kilauea Sugar Co., Ltd.	2,908	2,716	20,850
The Lihue Plantation Co.	16,002	7,743	55,920
McBryde Sugar Co., Ltd.	5,959	2,877	29,353
Olokele Sugar Co., Ltd.	4,798	2,373	29,736
TOTAL KAUAI	50,248	25,786	238,841
MAUI			
Hawaiian Commercial & Sugar Co.	31,255	14,938	192,530
Pioneer Mill Co., Ltd.	9,395	4,695	57,520
Wailuku Sugar Co.	5,027	2,458	29,679
TOTAL MAUI	45,677	22,091	279,729
OAHU			
Kahuku Plantation Co.	2,984	2,679	23,027
Oahu Sugar Co., Ltd.	20,227	10,591	117,794
Waialua Sugar Co., Ltd.	12,328	5,867	71,546
TOTAL OAHU	35,539	19,137	212,367
GRAND TOTAL	238,997	113,815	1,162,071

COMPARISON OF AVERAGE RAW SUGAR PRICE AND AVERAGE DAILY EARNINGS FOR NON-SUPERVISORY EMPLOYEES IN HAWAIIAN SUGAR INDUSTRY

	<i>Average New York Raw Sugar Price cwt. (Hawaiian Basis)</i>	<i>Average Daily Earnings¹</i>
1935.....	\$3.23	\$1.699
1936.....	3.60	1.884
1937.....	3.45	2.074
1938.....	2.93	2.134
1939.....	2.98	2.170
1940.....	2.78	2.180
1941.....	3.39	2.479
1942.....	3.74	2.900
1943.....	3.74	3.590
1944.....	3.74	3.910
1945.....	3.75	5.100
1946.....	4.59	5.275 ²
1947.....	6.22	7.632
1948.....	5.56	8.024
1949.....	5.81	8.040
1950.....	5.93	8.300
1951.....	6.06	9.000
1952.....	6.26	9.700
1953.....	6.29	10.200
1954.....	6.09	10.580
1955.....	5.95	10.62
1956.....	6.09	10.73
1957.....	6.25	11.20
1958.....	6.27	12.78
1959.....	6.24	12.84
1960.....	6.31	13.18
1961.....	6.30	14.11
1962.....	6.45	14.96
1963.....	8.20	16.68
1964.....	6.90	17.60
1965.....	6.75	18.40
1966.....	6.99	19.76
1967.....	7.28	21.35
1968.....	7.52	21.62
1969.....	7.75	23.26
1970.....	8.01	24.24

¹ Cash wage only. Does not include "employee benefits" which amounted to \$10.00 a day in 1970.

² Effective December 1946 the perquisite system, as such, was eliminated and charges for services were instituted which in total were designed to cover costs. In practice these costs have not been fully met and in case of medical care fall far short of this objective. Sugar company policy is to not make a profit on items formerly provided as perquisites.

Revised August, 1971

WAGES, HOURS & WORKING CONDITIONS

Hawaii's 10,600 year-round sugar company employees are the highest paid agricultural workers in the world, on the combined basis of their average daily cash earnings and the value of their employee benefits.

Sugar company production employees work in 11 labor grades. Current (August, 1971) Grade 1 rate of pay is \$2.41 an hour. Grade 11 employees earn \$4.30 an hour. Work performed in excess of 40 hours is paid for at premium rates.

DAILY AVERAGE EARNINGS IN 1970

Wages	\$24.24
Employee Benefits	10.00
Total	<u>\$34.24</u>

EMPLOYEE BENEFITS

Year-round employees receive up to four weeks vacation with pay, nine paid holidays a year; paid sick leave for up to 54 days, medical plan, a dental care plan for dependent children, retirement pensions, severance pay and many other benefits.

1970 PAYROLL COSTS OF 23 SUGAR COMPANIES, ALL EMPLOYEES

\$75,301,061

APPROXIMATE EMPLOYMENT BY OCCUPATION AT SUGAR COMPANIES

Factory	1,325
Field	3,625
Motive Equipment	1,900
Construction and Surveying	260
Dispensary	50
Clerical	280
Trades	1,400
Miscellaneous	510
Supervisors	1,250
Total	<u>10,600</u>

UNIONIZATION

Production and maintenance employees at 22 of Hawaii's 23 sugar companies are organized by the International Longshoremen's and Warehousemen's Union.

NON-MIGRATORY WORK FORCE

Unlike most farming areas which are seasonal and rely on migratory labor, Hawaii's sugar industry provides year-round, long-term employment. Sugar operations are conducted on a 12-month basis.

PRODUCTIVITY: HAWAII SUGAR FIELDWORKER

WEIGHTED AVERAGE EARNINGS \$ PER HOUR				MAN-HOURS PER TON SUGAR Raw Value	WAGE COSTS- PER TON SUGAR** Raw Value
Earnings	Benefits	Total			
1946	\$0.586	\$0.147	\$0.733	33.24	\$24.36
1947	.776	.123	.899	31.30	28.14
1948	.955	.140	1.095	30.54	33.44
1949	1.056	.185	1.241	27.32	33.90
1950	1.089	.195	1.284	25.86	33.20
1951	1.127	.235	1.362	24.18	32.93
1952	1.204	.251	1.455	23.00	33.47
1953	1.303	.269	1.572	23.42	36.82
1954	1.372	.339	1.711	21.06	36.03
1955	1.448	.405	1.853	17.42	32.28
1956	1.469	.448	1.917	17.30	33.16
1957	1.538	.482	2.020	16.46	33.25
1958	1.597	.571	2.168	18.02	39.07
1959	1.753	.521	2.274	16.90	38.43
1960	1.794	.557	2.351	16.72	39.31
1961	1.919	.605	2.524	13.90	35.08
1962	2.003	.734	2.737	13.76	37.66
1963	2.100	.750	2.850	13.56	38.65
1964	2.308	.750	3.058	11.76	35.96
1965	2.436	.800	3.236	10.82	35.01
1966	2.617	.800	3.417	10.50	35.88
1967	2.784	.900	3.684	10.64	39.20
1968	2.836	1.050	3.886	9.98	38.78
1969	3.083	1.200	4.283	9.44	40.43
1970	3.248	1.250	4.498	9.50	42.73

**Including Earnings and Fringe Benefits.

Source: U.S.D.A.

TAXES PAID

Sugar is one of the largest taxpayers in Hawaii. In 1970, sugar companies paid a total of about \$17,630,000 in Federal and State taxes. The largest single item in taxes was about \$8,761,000 in the Federal income tax. State taxes totalled about \$5,634,000. State taxes paid included:

Gross Income	\$1,661,000
Real Property	1,889,000
State Income	1,066,000
Unemployment	
Compensation	400,000
City & County Licenses ..	198,000
Miscellaneous	420,000

SUGAR LANDS

The Hawaiian Islands make up the union's fourth smallest state. The islands are actually the summits of a chain of volcanic mountains, some of which are still active. Only certain lowlands near the coasts are tillable because of the rugged terrain and the character of the soils. The balance is forest, pasture and wasteland.

Hawaii's sugar companies are located along the coastlines of the four sugar islands and push upwards into the foothills and mountains.

The companies have 238,997 acres devoted to growing sugar in Hawaii, another 15,906 acres used as mill sites, roads, irrigation ditch systems and reservoirs. This is equal to about 5.8 percent of total land area and about 11.3 percent of total private land.

More than half of the sugar lands are owned by the sugar companies. The balance is leased from government or private owners.

ISLAND LAND AREAS WITH SUGAR

Island	Ex- treme Length Miles	Ex- treme Width Miles	Area Square Miles*	Acres 000's	Total Cane Acreage**
Hawaii	93	76	4,038	2,573	107,533
Maui	48	26	729	466	45,677
Oahu	44	30	608	381	35,539
Kauai	33	25	553	353	50,248
Molokai ..	38	10	261	166	.....
Lanai	18	13	139	90	.....
Niihau	18	6	73	46	.....
Kahoolawe	11	6	45	29	.....
Minor Islands ..	....	....	4	2	.....
			6,450	4,106	238,997

* Includes land and inland water.

** Does not include mill sites, roads, etc.

HAWAII LAND OWNERSHIP

Government	Acres	
Federal	402,084	
State	1,590,532	
	1,992,616	1,992,616
Private		2,112,984
Total		4,105,600

LAND TENURE*

23 Sugar Companies & Independent Grower Farms/Adherent Planters

Land Used By Sugar Companies	Acres	Total Acres
Owned in Fee Simple	134,115	
Leased	104,882	
	238,997	238,997

Land Used By
Independent Grower Farms/
Adherent Planters

Leased from sugar companies	4,520	
Sub-leased from sugar companies	2,425	
Direct Ownership, or Leased from Other Sources	9,969	
	16,914	16,914
Total		255,911

INDEPENDENT GROWERS

Number Grower Farms** .. 715

* Includes "attributable land": roads, reservoirs, mill sites and irrigation ditch systems (approximately 15,900 acres).

** Does not include Co-producers or Adherent Planters.

CANE SUGAR: PRODUCTION IN HAWAII, 1908-1970

Production Year ¹ (Beginning Oct. 1st, Ending Sept. 30th)	Tons sugar per acre	Tons cane per ton sugar	Total cane land area	CANE USED FOR SUGAR			SUGAR PRODUCED		Raw value 96° sugar made per short tons of cane
				Acreage har- vested ²	Average yield per acre	Pro- duction	Converted to 96° raw value ³	Equivalent refined ⁴	
			Acres	Acres	Short Tons	Short Tons	Short Tons	Short Tons	Pounds
1908-1909.....	5.14	7.42	201,641	106,127	38.2	4,050,000	545,738	510,048	270
1909-1910.....	4.81	7.78	209,469	110,247	37.4	4,122,000	529,940	495,282	257
1910-1911.....	5.16	7.94	214,312	112,796	41.0	4,623,000	582,196	544,120	252
1911-1912.....	5.34	7.75	216,345	113,866	41.4	4,711,000	607,863	568,109	258
1912-1913.....	4.90	7.99	215,741	113,548	39.1	4,445,000	556,654	520,249	250
1913-1914.....	5.54	8.01	217,470	112,700	44.4	5,000,000	624,165	583,345	250
1914-1915.....	5.75	7.96	239,800	113,164	45.8	5,184,393	650,970	608,397	251
1915-1916.....	5.17	8.14	246,332	115,419	42.1	4,859,424	596,703	557,679	246
1916-1917.....	5.57	7.98	247,476	117,468	44.4	5,220,000	654,388	611,591	251
1917-1918.....	4.86	8.34	246,813	119,785	40.5	4,855,804	582,192	544,117	240
1918-1919.....	5.07	7.81	239,844	119,679	39.6	4,744,070	607,174	567,465	256
1919-1920.....	4.91	7.98	247,838	114,105	39.2	4,473,498	560,379	523,730	251
1920-1921.....	4.83	8.53	236,510	113,056	41.2	4,657,222	546,273	510,547	235
1921-1922.....	4.98	8.23	228,519	124,124	41.0	5,088,062	618,457	578,010	243
1922-1923.....	4.85	8.23	235,134	114,182	39.9	4,559,819	554,199	517,954	243
1923-1924.....	6.42	7.91	231,862	111,581	50.7	5,661,000	715,918	669,097	253
1924-1925.....	6.47	8.06	240,597	120,632	52.2	6,297,000	781,000	730,000	248
1925-1926.....	6.58	8.07	237,774	122,309	53.1	6,495,686	804,644	752,020	248
1926-1927.....	6.68	8.41	234,809	124,542	56.1	6,992,082	831,648	777,258	238
1927-1928.....	7.00	8.37	240,769	131,534	58.6	7,707,330	920,887	860,661	239
1928-1929.....	7.16	8.05	239,858	129,131	57.7	7,447,494	925,140	864,636	248
1929-1930.....	7.02	8.36	242,761	133,840	58.7	7,853,439	939,287	877,858	239
1930-1931.....	7.43	8.33	251,533	137,037	61.9	8,485,183	1,018,047	951,467	240
1931-1932.....	7.57	8.38	251,876	139,744	63.4	8,865,323	1,057,303	988,155	239
1932-1933.....	7.34	8.05	254,563	144,959	59.1	8,566,781	1,063,605	994,045	248
1933(Oct.1-Dec.31)							127,317	118,990	
1934*.....	7.14	8.33	252,237	134,318	59.5	7,992,260	959,337	896,596	240
1935.....	7.82	8.67	246,491	126,116	67.8	8,555,424	986,849	922,309	231
1936.....	7.97	8.80	245,891	130,828	70.1	9,170,279	1,042,316	974,149	227
1937.....	7.46	9.32	240,833	126,671	69.5	8,802,716	944,382	882,619	215
1938.....	6.92	9.39	238,302	135,978	65.0	8,835,370	941,293	879,732	213
1939.....	7.18	8.66	235,227	138,440	62.2	8,609,543	994,173	929,154	231
1940.....	7.16	8.76	235,110	136,417	62.7	8,557,216	976,677	912,802	228
1941.....	7.24	9.04	238,111	130,768	65.5	8,559,797	947,190	885,244	221
1942.....	7.58	9.10	225,199	114,745	69.0	7,918,342	870,099	813,195	220
1943.....	7.79	9.24	220,928	113,754	71.9	8,185,400	885,640	827,719	216
1944.....	7.99	8.95	216,072	109,522	71.5	7,832,185	874,947	817,725	223
1945.....	7.96	8.98	211,331	103,173	71.4	7,371,158	821,216	767,509	223

1946.....	8.06	8.83	208,376	84,379	71.1	6,002,127	680,073	635,596	227
1947.....	7.72	9.11	211,624	113,020	70.3	7,942,216	872,187	815,146	220
1948.....	8.35	9.03	206,550	100,042	75.4	7,542,613	835,107	780,491	221
1949.....	8.76	8.44	213,354	108,794	73.9	8,045,941	955,890 ⁵	893,375	238
1950.....	8.78	8.51	220,383	109,405	74.7	8,174,821	960,961 ⁶	898,114	235
1951.....	9.09	8.51	221,212	109,494	77.4	8,477,201	995,759	930,636	235
1952.....	9.44	8.52	221,990	108,089	80.4	8,693,920	1,020,450	953,712	235
1953.....	10.15	8.19	221,542	108,337	83.1	9,003,967	1,099,316	1,027,421	244
1954.....	10.02	8.75	220,138	107,480	87.75	9,431,781	1,077,347	1,006,889	228
1955.....	10.74	8.66	218,819	106,180	92.94	9,867,978	1,140,112	1,065,525	231
1956.....	10.28	9.01	220,606	106,956	92.65	9,909,990	1,099,543	1,027,633	222
1957.....	10.16	8.71	221,336	106,742	88.51	9,447,647	1,084,646	1,013,710	230
1958.....	9.09	9.87	221,683	84,136	89.77	7,552,750	764,953	714,925	203
1959.....	8.83	9.66	222,588	110,371	85.31	9,416,225	974,632	910,891	207
1960.....	9.03	9.20	224,617	103,584	83.15	8,613,317	935,744	874,546	217
1961.....	10.09	8.78	227,027	108,320	88.58	9,595,342	1,092,481	1,021,033	228
1962.....	10.31	8.76	228,926	108,600	90.36	9,812,580	1,120,011	1,046,762	228
1963.....	10.25	9.12	231,321	107,436	93.39	10,033,969	1,100,768	1,028,777	219
1964.....	10.64	8.90	233,145	110,759	94.76	10,495,175	1,178,770	1,101,678	225
1965.....	11.11	8.82	235,576	109,600	97.97	10,737,507	1,217,667	1,138,033	227
1966.....	11.12	8.89	237,499	111,005	98.82	10,969,925	1,234,121	1,153,409	225
1967.....	10.65	9.27	239,813	111,837	98.74	11,045,949	1,191,042	1,113,148	216
1968.....	10.85	9.15	242,476	113,525	99.36	11,279,920	1,232,182	1,151,597	218
1969.....	10.90	9.17	242,216	113,232	95.73	10,839,272	1,182,414	1,105,060	218
1970.....	11.11	9.00	238,997	113,816	91.88	10,457,377	1,162,071	1,086,000	222

- From 1908-1933 acreage harvested represents summation of plantation crop years and does not necessarily correspond to the period Oct. 1 to Sept. 30.
- The average growth of a crop is from 22 to 24 months. Only a portion of the total acreage in cane is harvested each year.
- Converted in accordance with Sugar Regulations, Series 1, No. 1, U.S. Department of Agriculture, Agricultural Adjustment Administration, issued February 18, 1935, or Section 101(h) of

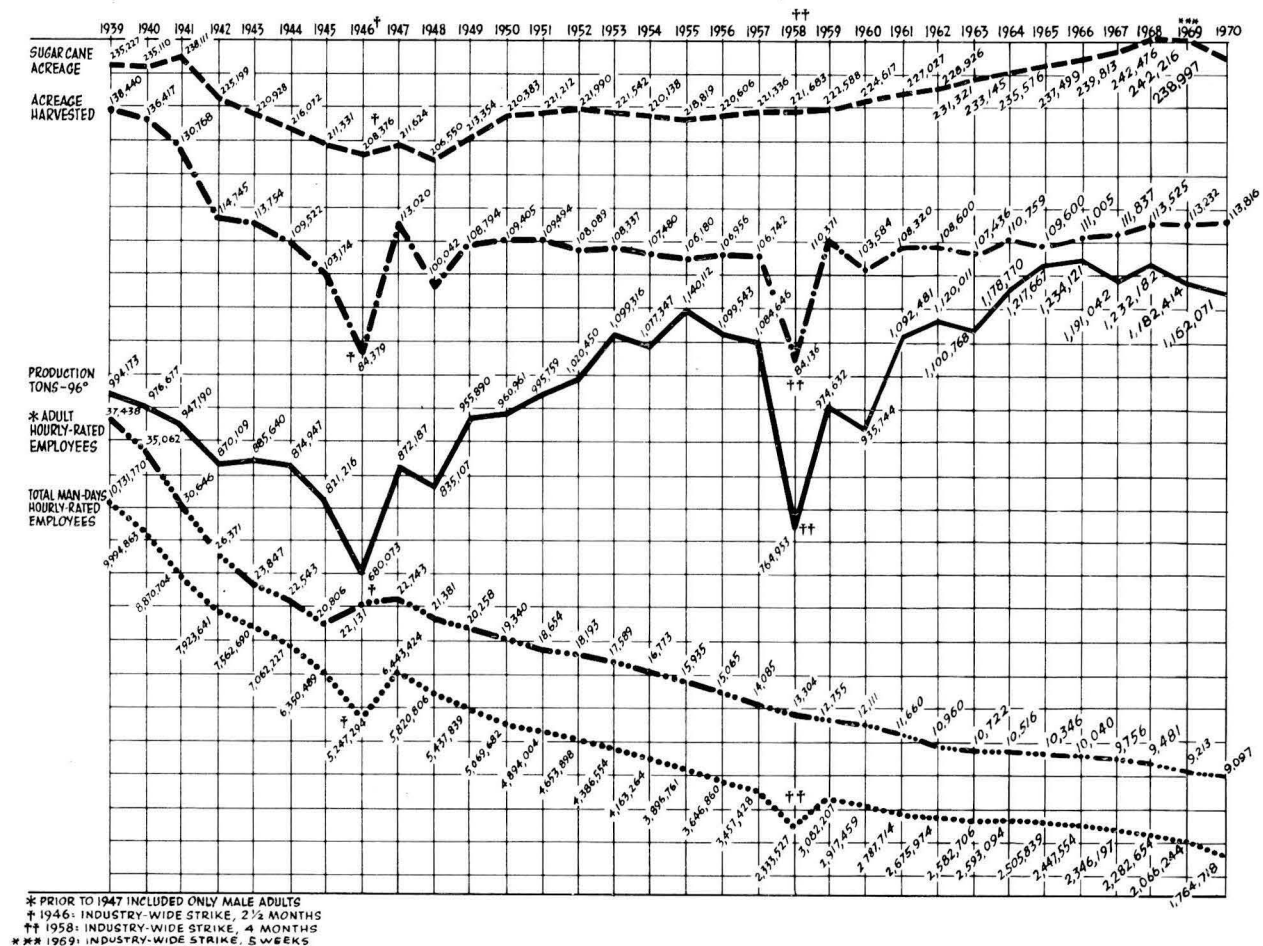
the Sugar Act of 1948 or corresponding provisions of its predecessors, as the case may be.

- 1 ton of sugar, 96° test is assumed to be equivalent to 0.9346 tons of refined.
- Includes 2,369 tons raw sugar produced from volunteer cane for which no acreage shown.
- Includes 2,690 tons raw value sugar produced from volunteer cane for which no acreage shown.

*Begin Calendar Year Basis.

COMPARISON:

SUGARCANE ACREAGE,
ACREAGE HARVESTED,
PRODUCTION, AVERAGE
NUMBER OF ADULT
HOURLY RATED
EMPLOYEES, AND
TOTAL MAN-DAYS
ALL HOURLY RATED
EMPLOYEES ON
HAWAIIAN SUGAR
PLANTATIONS



INDUSTRY ORGANIZATION

All 23 Hawaiian sugar companies operate independently of each other, each with its own management. But to facilitate the actual production of sugar, all sugar companies but one are represented by an agency or parent company in Honolulu.

This representation grew out of a lack of communications and transportation during the early period of the Hawaiian industry's emergence as we know it today. A century ago, the only means of travel and communication between islands were inter-island sailing vessels, and the planters relied on Honolulu agents for certain business services.

The agencies and parent companies of today offer a variety of services to the sugar companies which do not require the full-time services of specialists on the sugar companies management staffs. These services include financial, accounting, purchasing, shipping and other technical assistance. The specialists of one agency or parent company serve a number of sugar companies in most instances. Agencies and parent companies are Alexander & Baldwin, Inc.; Amfac, Inc.; Bishop Trust Company, Ltd.; C. Brewer and Company, Ltd.; Castle & Cooke, Inc. and Theo. H. Davies & Company, Ltd.

HAWAIIAN SUGAR PLANTERS' ASSOCIATION

The Hawaiian Sugar Planters' Association was established in 1895 replacing the Planters' Labor and Supply Company which had been in existence since 1882.

The Association is a nonprofit, agricultural organization of sugar companies and individuals united for the purposes of maintenance, advancement and protection of the sugar industry in Hawaii, the support of a scientific experiment station and the development of agriculture in general.

The HSPA is administered by an executive committee composed of sugar company representatives. The president, who serves for one year, is elected from among the committee members.

The following principal committees represent the major activities of the Association: Accounting, Industrial Relations, Insurance, Land, Legislative, Growers', Tax, Experiment Station Advisory, and Environmental Standards.

The HSPA acts as a clearing house for all scientific activities of the industry, making possible the utilization of the best technical knowledge available.

The Experiment Station of the Hawaiian Sugar Planters' Association also was established in 1895. The cost of operating this scientific research organization, some \$2,500,000 annually, is borne in full by the HSPA, with each sugar

company paying a pro-rata share of the total.

The Station has developed many new varieties of sugar cane particularly suitable for the Hawaiian soil and climate, has kept insect pests and plant diseases at a minimum, and has contributed generally to the high yield of Hawaiian cane areas. Its research and services have benefited all agriculture in Hawaii. The Station maintains substations on all of the four sugar producing islands and a quarantine station on Molokai.

The HSPA maintains an office in Washington, D.C., which represents the industry in all of its government relationships, in contacts with other elements of the domestic industry, and acts as general representative of the industry on the mainland.

REFINING HAWAIIAN RAW SUGAR

All of Hawaii's raw sugar and molasses production is marketed by the California and Hawaiian Sugar Company, the only cane sugar refiner on the Pacific Coast.

C and H, as the company and its products are generally known, is an agricultural marketing association. Its stock is owned by its 23-member sugar producing companies in Hawaii, substantially in the same proportion as the tonnage of raw sugar each markets through the association. C and H also serves as refining and marketing agency for some 715 independent, non-member sugar cane farmers in Hawaii.

C and H was established in 1906—under the Capper-Volstead Act which authorizes cooperative marketing associations by producers of agricultural products—in a successful effort by Hawaiian sugar producers to overcome discriminatory pricing practiced against Hawaiian raw sugar by a "sugar trust" which existed at that time among mainland sugar refiners.

Headquartered in San Francisco, C and H has capacity to refine approximately 1 million tons of raw sugar annually. Hawaiian raw sugar not required for C and H refining operations is sold by the company to Gulf and Atlantic Coast refiners. Hawaiian molasses is sold to distributors by C and H, primarily for use in animal feed.

Two refineries are operated by C and H, one the world's largest at Crockett, California near San Francisco, the other a smaller plant at Aiea, near Honolulu. The Crockett refinery has capacity to melt about 960,000 tons of raw sugar annually. The Aiea refinery can process about 40,000 tons of raw sugar a year, primarily to supply the refined sugar needs of Hawaii.

The mainland refinery is strategically located for receipt of raw sugar and other supplies as well as for distribution of refined sugars. Crockett is a protected deep water port on Carquinez Strait, where it joins San Francisco

Bay. Adjacent to a transcontinental highway, the refinery also is near the West Coast rail-heads of three major railways.

At the Crockett refinery bulk raw sugar cargoes are discharged from ships into dockside storage bins. These receiving and storage facilities have capacity for more than 100,000 tons of raw sugar.

Although portions of the refinery structure pre-date 1906, it houses some of the most innovative, sophisticated equipment and facilities in the industry. Fully equipped laboratories are staffed for basic research, quality control, new products research as well as microbiological and packaging materials investigation.

The refinery operates the year round, producing refined sugars in more than 100 types, grades and package sizes, including an unsurpassed variety of packaged sugars for the grocery trade, as well as sugars for industrial use in packaged, bulk granulated and liquid form. High speed refinery packaging equipment has capacity to turn out more than a million consumer size packages of refined sugar a day.

More than one and one-half miles of conveyors take packaged sugar from packing stations to automatic palletizers in the warehouse which mechanically form pallet loads and move sugar-loaded pallets into warehouse storage and shipping areas.

This warehouse has storage space for more than 50,000 tons of refined sugar.

Shipments of refined sugar move from the warehouse to customers by rail, truck and river boat. Within the warehouse is an enclosed rail siding upon which up to 14 standard freight cars can be spotted alongside loading docks. A covered truck-loading station can accommodate seven truck-trailer units for simultaneous loading.

Terminals for storage and distribution of bulk and liquid industrial sugars are operated by C and H at Seattle, Washington; Portland, Oregon; Crockett and Los Angeles, California; Aiea, Hawaii; and Phoenix, Arizona.

C and H sugars are sold in the two-thirds of the U.S. mainland, generally west of the Mississippi River Valley, as well as in Hawaii and Alaska. Sugars packaged for grocery sales under the "C and H" trademark are distributed more widely in this region than any other brand.

Chief competition for sales encountered by C and H is from beet sugar produced in 50 sugar beet factories. The majority of these processing plants are located in the 11 Western states, which due to freight costs comprise the primary, preferred market for C and H.

Sales of C and H sugars are handled through company sales offices in San Francisco, Oakland and Los Angeles, California and through sugar brokers with offices in key locations throughout the balance of the territory served.

C and H employs approximately 1,600 persons in mainland operations and has about 80 employees at the Aiea refinery. Total annual payroll is in excess of \$17 million.

James H. Marshall is president and chief executive officer of C and H. Company headquarters offices are at One California Street, San Francisco, California, 94106.

HAWAII STATE GOVERNMENT DIRECTORY

The Islands of Hawaii joined the United States as a territory in 1898. Statehood was granted in 1959. Seat of State government is in Honolulu.

STATE ADMINISTRATION

Governor: John A. Burns (D)

Lt. Governor: George R. Ariyoshi (D)

State Department & Department Heads

Accounting & General Services—KeNan Kim, *Comptroller*

Agriculture & Conservation—Frederick C. Erskine, *Chairman*

Attorney General—George T. Y. Pai, *acting*
Budget & Review—Hiram Kamaka, *Director*

Department of Defense—Maj. Gen. Benjamin J. Webster

Planning & Economic Development—Dr. Shelley M. Mark, *Director*

Education—Dr. Shiro Amioka, *Superintendent*

Health—Dr. Walter B. Quisenberry, *Director*
Hawaiian Home Lands—William G. Among,

Chairman, Hawaiian Homes Commission

Labor & Industrial Relations—Robert Hasegawa, *Director*

Land & Natural Resources — Sunao Kido, *Chairman*

Personnel Services — James H. Takushi, *Director*

Social Services—Myron B. Thompson, *Director*
Taxation—Ralph W. Kondo, *Director*

Transportation—Dr. Fujio Matsuda, *Director*
Regulatory Agencies — Edwin H. Honda, *Director*

University of Hawaii — Harlan Cleveland, *President*

State Legislature

President, Senate—David C. McClung (D)

Speaker, House of Representatives — Tadao Beppu (D)

Congressional Delegation

U.S. Senate

Hiram L. Fong (R) Daniel K. Inouye (D)

U.S. House of Representatives

Spark M. Matsunaga Patsy Takemoto Mink
(D) (D)

IMPORTANT HISTORICAL DATES

- 1802 Unidentified Chinese made crude sugar in primitive mill on Lanai Island, abandoned efforts.
- 1825 First plantation attempted in Manoa Valley, Oahu.
- 1835 Ladd & Company founded first successful plantation, Koloa on Kauai.
- 1837 First Koloa crop, 2.1 tons.
- 1838 Twenty sugar mills in operation, 18 animal powered, 2 water.
- 1852 First sugar centrifugal introduced, Makawao Plantation; arrival of first Chinese laborers.
- 1853 First steam engine, Koloa.
- 1857 Irrigation introduced, Lihue.
- 1859 First steam mill, Lihue.
- 1860 Judd and Wilder established first mill on Oahu, Kualoa Plantation.
- 1863 Pepeekeo introduced vacuum pan.
- 1868 First Japanese laborers arrived.
- 1876 Alexander & Baldwin built Hamakua Ditch at cost of \$80,000, first large scale irrigation on islands, seventeen miles long and producing 40,000,000 gallons a day; reciprocal trade treaty, Kingdom of Hawaii and United States, admitted sugar duty free.
- 1878 Portuguese immigrants arrived.
- 1879 Ewa drilled first artesian well; Onomea pioneered with commercial fertilizer.
- 1881 German immigrants arrived at Lihue; Hamakua bought first steam plow.
- 1882 H.S.P.A. organized as Planters' Labor & Supply Co.
- 1885 First chemist engaged; Makee inaugurated night grinding.
- 1886 First 100,000-ton crop.
- 1895 Experiment Station founded; Ewa installed 9-roller mill.
- 1897 First 250,000-ton crop.
- 1898 Hawaii annexed to United States.
- 1904 Leaf hopper parasites introduced from Australia.
- 1905 H-109 variety of cane germinated from seedling.
- 1906 California & Hawaiian Sugar Refining Corp. founded; Filipino immigration.
- 1907 Oahu Sugar Co. installed first 12-roller mill.
- 1910 Kilauea introduced gasoline tractor. Cane borer parasite introduced from New Guinea.
- 1916 Anomala beetle parasite introduced from the Philippines.
- 1918 H.S.P.A. opened forestry department.
- 1920 Leaf hopper completely controlled by egg-sucking bug introduced from Australia and Fiji.
- 1922 First commercial scale mechanical loading of sugar cane by self-propelled vehicle.
- 1923 First Dorr Clarifiers (2 factories).
- 1924 First of series of ten consecutive record crops.
- 1926 First Oliver Filter, Oahu Sugar Company.
- 1928 Establishment of sugar cane quarantine station on Island of Molokai. H-109 planted in 100,000 acres.
- 1932 First million-ton crop; *bufo marinus*, insectivorous frog, brought to Territory to control pests.
- 1934 First high speed sugar centrifugals—Waiialua.
- 1935 Long-line irrigation widely adopted by plantations.
- 1936 First major use of trucks for cane hauling. HSPA insect and plant disease quarantine started on Midway Island.
- 1937 Expedition to New Guinea to collect wild sugar canes for breeding. Mechanical harvesting begun at Ewa Plantation. Development of "prebaiting" technique of rat control. Research on food yeast from molasses. Mechanical harvesting by "grabs" started—Ewa Plantation.
- 1939 HSPA insect and plant disease quarantine started on Canton Island.
- 1941 32-8560 displaces H-109 as leading variety. First precision refractometer for factory control.
- 1942 New armyworm parasite brought from Texas. Plantation operations subordinated to defense requirements. War brings acute shortage of labor and equipment, resulting in forced use of all known types of mechanization. First bulk sugar plant began operating at Kahului, Maui.
- 1945 Development of activated diesel oil emulsion for weed control. Organization of the Agricultural Engineering Research Department to consolidate and expand research development. HSPA furnished \$100,000 to finance University of Hawaii Agricultural Engineering Institute buildings and equipment. Ion exchange research started. HSPA Activator patented.
- 1946 Production reduced severely by two-and-a-half month strike.
- 1947 Plantation railroads rapidly being replaced with trucks. Field testing started on several types of cane cutters. Ion exchange pilot plant in operation.

- 1948 V-cutter and side mounted cutter for unirrigated cane and 2-line cutter for irrigated cane developed. Chemical weed control with pre-emergence and contact herbicides used on all plantations.
- 1949 Second bulk sugar plant began operating at Hilo, Hawaii.
- 1950 First commercial models of HSPA-developed harvesting machines for both irrigated and unirrigated plantations put into operation at three plantations; third bulk sugar plant began operating at Nawiliwili, Kauai; aluminum flumes used on a field scale for irrigation and cane transport. Technical Advisory Committee on By-Products organized; Experimental Statistics department organized.
- 1951 By-products pilot plant installed at Oahu Sugar Co., Ltd.; direct-mounted cane cutter and infield transport machine for unirrigated plantations developed; 37-1933 replaces 32-8560 as leading cane variety; radioactive materials used in irrigation and fertilization experiments; 40-hour week for half the year established on plantations; first bulk raw sugar shipments made to east coast. Aerial fertilization began.
- 1952 Cane buggy adopted by Hilo-coast plantations.
- 1953 First commercial application of liquid nitrogen fertilizer (aqua ammonia) made at Ewa Plantation Co.; Kauai and Maui plantations hit hardest by one of the Territory's worst droughts.
- 1954 First industry-wide pension plan established; HSPA corrosion inhibitor developed; 124-acre arboretum deeded to the University of Hawaii; HSPA meteorologists participate in Project Shower, "warm" rainfall study.
- 1955 Bulk sugar storage-loading plant completed at Honolulu.
- 1956 California and Hawaiian Sugar Company celebrated its fiftieth anniversary. Total half-century production came to nearly 25 million tons of raw sugar refined. Long-term agreement reached providing that Imperial will buy Hawaiian raw sugar to fill a substantial part of its needs.
- 1957 Regular shipments of Hawaiian raw sugar to Imperial Sugar Company started.
- 1958 Four-month-long, industry-wide strike drastically reduced production.
- 1959 Tenth Congress of International Society of Sugar Cane Technologists held in Honolulu.
- 1960 Variety 44-3098 replaced 37-1933 as leading cane variety.
- 1961 Production, reduced for three years by the 1958 strike, returned to normal levels.
- 1962 Hakalau Sugar Company was merged into Pepeekeo Sugar Company, reducing the number of sugar companies to 25. Variety 50-7209 replaced 44-3098 as leading cane variety.
- 1964 First sugar cane diffuser began commercial operation at Pioneer Mill.
- 1966 Record raw sugar crop of 1,234,121 tons was produced.
- 1967 First commercial model of HSPA developed sugar cane dry cleaner tested at Laupahoehoe Sugar Co.
- 1969 Five-week industry-wide strike over terms of new three-year contracts.
- 1970 First commercial sugar cane dry cleaner installed at Paauhau Sugar Co. on Hawaii Island.
- 1971 Months-long West Coast Longshoreman's strike stops shipments to C&H, disrupts C&H marketing program, and creates raw sugar and molasses storage problems in Hawaii.

Part II

U.S. SUGAR INDUSTRY

America's sugar needs are met by a variety of sources, both domestic and foreign. Including Hawaii, 27 states produce sugar. Other states, which do not produce sugar themselves, have sugar refineries.

Florida and Louisiana are the only two states on the U.S. mainland which grow and process sugarcane. The Commonwealth of Puerto Rico also produces sugarcane. Production of these three areas in 1970 was in short tons, raw basis: 652,000, 602,000 and 460,159 respectively.

Foreign sugar, all produced from sugarcane, is supplied by 31 countries. Virtually all of this sugar enters the U.S. through ports on the Gulf and East Coasts.

In 1970, American consumers and businesses consumed 11,309,516 tons of sugar. Of this, 60 percent was domestically produced with the balance supplied by foreign producers.

BEET SUGAR INDUSTRY

About one-third of the sugar consumed in the U.S. is produced from sugarbeets. Grown by small farmers in 24 states, sugarbeets are sold under contract to 12 sugarbeet processing companies operating 50 factories in 18 states.

The first successful sugarbeet processing plant

commenced operations near San Francisco, Calif. in 1870.

CANE SUGAR REFINING INDUSTRY

Approximately two-thirds of the sugar consumed in the United States is cane sugar refined in the continental United States. The nation's cane sugar refining industry consists of 24 refineries located principally on the East and Gulf Coasts with one large refinery near San Francisco. Smaller plants and distribution stations are operated principally in the South and Middle West.

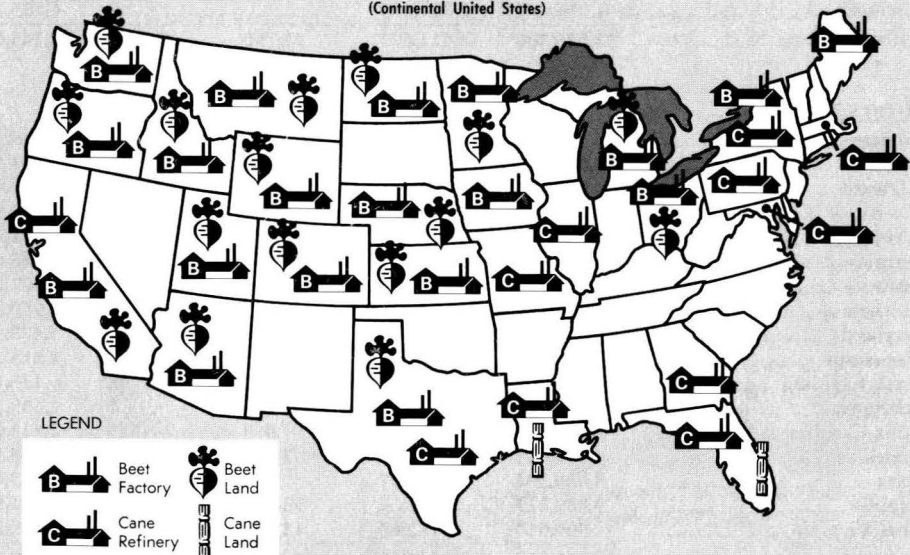
Cane sugar refining is one of America's oldest industries, dating back to pre-Revolutionary times. Today, the industry represents a capital investment of almost \$500,000,000 in buildings, machinery, docks, land and other physical properties. It provides direct employment to more than 17,500 persons and has an annual payroll in excess of \$100,000,000.

Raw cane sugar supplies for the refineries are now obtained from practically all four corners of the globe with the domestic producing areas—Hawaii, Puerto Rico, and on the mainland, Louisiana and Florida—contributing up to 40 per cent. The annual melting (or processing) capacity of the industry is approximately 8,250,000 short tons of raw sugar. According to official statistics, the 1970 volume of melt was 7,653,575 tons.

Cont. on Page 19

MAJOR SUGARCANE, SUGARBEET PRODUCING AREAS; & STATES PROCESSING SUGARCANE OR BEETS

(Continental United States)



DELIVERIES OF SUGAR IN CONTINENTAL UNITED STATES BY PRIMARY DISTRIBUTORS, CALENDAR YEAR 1970

State and Region	Cane Sugar Refiners	Beet Sugar Processors	Importers of Direct- Consumption Sugar	Mainland Cane Sugar Mills	Total
			Hundredweights ¹		
NEW ENGLAND					
Connecticut	1,302,401	23,670	54,026	200	1,380,297
Maine	511,423	23,731	10,259	.....	545,413
Massachusetts	5,145,791	149,688	72,865	1,500	5,369,844
New Hampshire	367,356	2,185	13,127	.....	382,668
Rhode Island	383,382	31,575	33,542	.....	448,499
Vermont	221,477	11,103	.....	.....	232,580
SUB-TOTAL	7,931,830	241,952	183,819	1,700	8,359,301
MID-ATLANTIC					
New Jersey	9,529,735	14,025	725,363	40,767	10,309,890
New York	15,577,369	460,136	688,284	10,010	16,735,799
Pennsylvania	13,144,346	260,479	536,158	13,252	13,954,235
SUB-TOTAL	38,251,450	734,640	1,949,805	64,029	40,999,924
NORTH CENTRAL					
Illinois	8,941,681	16,691,430	19,750	62,500	25,715,361
Indiana	4,665,389	1,586,615	3,600	.....	6,255,604
Iowa	657,957	1,951,037	.....	.....	2,608,994
Kansas	540,912	1,159,385	.....	3,030	1,703,327
Michigan	3,698,533	4,515,539	.....	1	8,214,073
Minnesota	444,932	2,687,830	.....	.....	3,132,762
Missouri	3,472,302	1,927,836	.....	5,980	5,406,118
Nebraska	234,872	1,621,856	.....	.....	1,856,728
North Dakota	10,918	370,485	.....	.....	381,403
Ohio	8,204,589	2,727,525	2,400	10,000	10,944,514
South Dakota	25,569	317,435	.....	.....	343,004
Wisconsin	1,729,054	2,854,699	.....	.....	4,583,753
SUB-TOTAL	32,626,708	38,411,672	25,750	81,511	71,145,641
SOUTHERN					
Alabama	2,628,412	.....	.....	20,164	2,648,576
Arkansas	1,211,372	129,621	.....	8	1,341,001
Delaware	1,949,504	.....	2,920	.....	1,952,424
District of Columbia	443,969	.....	1,000	.....	444,969
Florida	4,549,446	.....	400	821,790	5,371,636
Georgia	6,956,584	.....	1,920	19,513	6,978,017
Kentucky	2,402,279	2	.....	.....	2,402,281
Louisiana	3,902,950	.....	.....	56,886	3,959,836
Maryland	5,197,231	5	276,018	5,697	5,478,951
Mississippi	1,513,860	.....	.....	1,425	1,515,285
North Carolina	4,132,298	.....	20,662	99	4,153,059
Oklahoma	1,279,598	383,941	.....	2	1,663,541
South Carolina	2,109,785	.....	4,898	389	2,115,072
Tennessee	4,100,621	—18	2,960	.....	4,103,563
Texas	8,680,301	1,820,647	60	47,998	10,549,006
Virginia	3,089,219	.....	93,669	19,050	3,201,938
West Virginia	900,550	17,560	11,100	.....	929,210
SUB-TOTAL	55,047,979	2,351,758	415,607	993,021	58,808,365

Continued Bottom Next Page

SUGAR DELIVERIES, BY TYPE OF PRODUCT OR BUSINESS OF BUYER AND BY TYPE OF SUGAR, CALENDAR YEAR 1970¹

Product or Business of Buyer	Beet (Total)	Cane (Total)	Imported		Liquid Sugar	
			D.C. (Total)	Total All Sugar	Included in Totals Beet	Cane
(Hundredweights ² in 000's)						
INDUSTRIAL						
Bakery, cereal and allied products	11,386	17,829	153	29,368	793	2,694
Confectionery and related products	8,198	13,701	226	22,124	169	3,226
Ice cream and dairy products	4,084	6,796	63	10,943	1,975	4,774
Beverages	11,782	35,310	50	47,142	5,199	24,906
Canned, bottled, frozen foods, jams, jellies and preserves	8,744	9,603	213	18,559	3,308	4,797
Multiple and all other food uses	3,394	5,024	92	8,510	121	1,110
Non-food products	232	1,387	34	1,654	23	526
SUB-TOTAL	47,821	89,650	831	138,300	11,588	42,033
NON-INDUSTRIAL						
Hotels, restaurants, institutions..	112	1,648	40	1,800	23	155
Wholesale grocers, jobbers, sugar dealers	13,736	29,448	769	43,953	464	300
Retail grocers, chain stores, super markets	4,543	20,754	1,104	26,401	129	185
All other deliveries, including deliveries to Government agencies	518	1,444	6	1,967	25	166
SUB-TOTAL	18,909	53,294	1,919	74,121	641	807
TOTAL DELIVERIES	66,730	142,944	2,750	212,421	12,229	42,839
Deliveries in consumer-size packages (less than 50 lbs.)..						
Deliveries in bulk (unpackaged)	10,529	39,520	834	50,883	.....	.....
	26,595	32,451	0	59,047	.....	.....

¹Represents approximately 100.0 percent of deliveries by primary distributors in continental United States. ²Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.
Source: Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture.

CONTINUED FROM PRECEDING PAGE—

Deliveries, Sugar, Continental U.S., by Primary Distributors

State and Region	Cane Sugar Refiners	Beet Sugar Processors	Importers of Direct- Consumption	Mainland Cane Sugar Mills	Total
			Sugar		
Hundredweights ¹					
WESTERN					
Alaska	19,688	44,443	.....	.....	64,131
Arizona	299,933	640,113	.....	.....	940,046
California	6,004,233	17,101,072	110,654	.....	23,215,959
Colorado	267,290	1,514,425	.....	3	1,781,718
Idaho	33,667	340,301	.....	.....	373,968
Montana	53,459	308,068	.....	.....	361,527
Nevada	67,809	63,011	.....	.....	130,820
New Mexico	66,466	218,009	.....	.....	284,475
Oregon	506,370	1,735,483	13,237	.....	2,255,090
Utah	98,712	757,413	.....	.....	856,125
Washington	615,604	2,320,263	51,089	.....	2,986,956
Wyoming	28,632	72,788	.....	.....	101,420
SUB-TOTAL	8,061,863	25,115,389	174,980	3	33,352,235
GRAND TOTAL	141,919,830	66,855,411	2,749,961	1,140,264	212,665,466

¹Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.
Source: Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture.

**SUGARBEETS: ACREAGE, PRODUCTION, SEASON AVERAGE PRICE
PER TON RECEIVED BY FARMERS AND VALUE; PRODUCTION OF
BEET SUGAR AND MOLASSES PULP, UNITED STATES,
5-YEAR INTERVALS 1915-1935 — ANNUAL 1935-1970**

Year	Acres Planted	Acres Harvested	Average Yield Per Acre	Production	Price ¹	Farm value ²	Sugar produced (refined basis)	Molasses pulp
	1,000 acres	1,000 acres	Short tons	1,000 short tons	Dollars Per Ton	1,000 Dollars	1,000 short tons	1,000 short tons
1915.....	664	611	10.7	6,511	5.67	36,950	874	.....
1920.....	978	872	9.8	8,538	11.63	99,324	1,089	.....
1925.....	781	648	11.4	7,381	6.39	47,137	913	.....
1930.....	821	776	11.9	9,199	7.14	65,698	1,208	150
1935.....	809	763	10.4	7,908	5.76	45,565	1,185	125
1936.....	855	776	11.6	9,028	6.05	54,636	1,304	157
1937.....	813	753	11.6	8,759	5.26	46,101	1,283	166
1938.....	985	925	12.4	11,497	4.65	53,478	1,674	219
1939.....	993	918	11.7	10,781	4.76	51,342	1,641	175
1940.....	971	912	13.4	12,194	5.11	62,287	1,758	182
1941.....	796	755	13.7	10,342	6.43	66,522	1,488	176
1942.....	1,048	954	12.2	11,685	6.84	79,905	1,617	149
1943.....	619	550	11.9	6,547	8.81	57,674	935	92
1944.....	633	555	12.1	6,718	10.60	71,156	979	72
1945.....	775	713	12.1	8,616	10.20	87,539	1,191	121
1946.....	905	802	13.2	10,582	11.10	117,840	1,422	153
1947.....	968	879	14.2	12,503	11.80	148,080	1,719	203
1948.....	800	694	13.6	9,424	10.60	99,639	1,280	199
1949.....	768	687	14.8	10,196	10.80	110,369	1,461	204
1950.....	1,014	925	14.6	13,535	11.20	151,293	1,878	293
1951.....	758	691	15.2	10,482	11.70	122,483	1,448	231
1952.....	719	665	15.3	10,169	12.00	121,970	1,407	253
1953.....	794	745	16.2	12,084	11.60	140,364	1,697	324
1954.....	964	876	16.1	14,082	10.80	152,151	1,909	355
1955.....	798	740	16.5	12,228	11.20	136,477	1,625	354
1956.....	831	785	16.6	12,993	11.90	155,087	1,837	428
1957.....	918	880	17.7	15,530	11.20	174,261	2,050	480
1958.....	935	891	17.0	15,150	11.70	177,807	2,056	484
1959.....	955	905	18.8	17,015	11.20	191,186	2,187	591
1960.....	977	957	17.2	16,421	11.60	190,109	2,291	613
1961.....	1,129	1,077	16.4	17,704	11.20	197,547	2,247	712
1962.....	1,182	1,103	16.5	18,254	12.80	233,243	2,417	676
1963.....	1,285	1,235	18.9	23,328	12.20	285,011	2,893	1,004
1964.....	1,460	1,395	16.8	23,389	11.80	275,660	3,073	1,114
1965.....	1,314	1,249	16.8	20,915	11.95	249,836	2,705	989
1966.....	1,240	1,161	17.5	20,342	12.80	260,355	2,643	933
1967.....	1,197	1,122	17.1	19,197	13.55	260,114	2,464	923
1968.....	1,476	1,410	18.0	25,363	13.81	350,207	3,255	1,292
1969.....	1,647	1,541	18.0	27,736	12.72	352,863	3,112	1,359
1970 ⁴	1,478	1,412	18.6	26,198	14.90	390,350	2,999	N.A.

¹Most years from 1915 to 1923 include a small unknown quantity of beets grown in Canada for Michigan factories.
²Basis of Crop Year including beets planted in previous fall in California and Arizona. ³Includes production incentive payments which were payments made to producers of sugarbeets and sugarcane by the Commodity Credit Corporation during the period of government price control in World War II, to stimulate production, but excludes Sugar Act payments. ⁴Preliminary. N.A.—Not available.
Source: Statistical Reporting Service, U.S. Department of Agriculture.

The 18 operating companies and the location of their refineries are as follows:

Sucrest Corporation Brooklyn, N.Y.
Chicago, Ill.
Amstar Corp. Boston, Mass.
Brooklyn, N.Y.
Philadelphia, Pa.
Baltimore, Md.
Chalmette, La.
J. Aron & Co., Inc. Supreme, La.
California & Hawaiian
Sugar Co. Crockett, Calif.
Aiea, Hawaii
Colonial Sugars Co. Gramercy, La.
Everglades Sugar
Refinery, Inc. Clewiston, Fla.
Florida Sugar
Refinery, Inc. Belle Glade, Fla.

Glades County Sugar
Grower Cooperative
Assoc. Moore Haven, Fla.
Godchaux-Henderson,
Inc. Reserve, La.
Imperial Sugar Co. Sugar Land, Texas
Industrial Sugars, Inc. St. Louis, Mo.
The National Sugar
Refining Co. Philadelphia, Pa.
Pepsico Co. Long Island City, N.Y.
Refined Syrups &
Sugars, Inc. Yonkers, N.Y.
Revere Sugar Refinery ..Charlestown, Mass.
Savannah Sugar Foods
& Industries, Inc. Port Wentworth, Ga.
The South Coast Corp. Mathews, La.
Southdown, Inc. Houma, La.

Source: United States Cane Sugar Refiners' Association.

BEET SUGAR PRODUCTION IN THE UNITED STATES—1965 TO 1969* (Hundredweight, refined)

State	1969	1968	1967	1966	1965	Average ² 1965 to 1969	Per Cent
California	16,314,519	16,253,094	10,167,298	13,234,481	14,764,916	14,146,862	24.50
Idaho	7,521,358	7,382,771	5,967,710	4,964,775	6,509,192	6,469,161	11.21
Colorado	6,903,300	9,070,429	7,739,979	8,087,400	7,810,542	7,922,330	13.72
Minnesota	4,784,928	4,646,989	3,814,006	3,851,762	3,120,518	4,043,641	7.00
Washington	4,538,724	3,717,507	2,782,500	3,414,451	3,651,539	3,620,944	6.27
Montana	3,417,360	3,361,747	3,217,765	3,113,022	2,278,077	3,077,594	5.33
Michigan	3,406,733	3,229,642	2,854,795	2,893,539	2,263,762	2,929,694	5.08
Nebraska	3,049,424	3,056,543	2,125,020	2,954,383	2,262,884	2,689,651	4.66
Wyoming	2,572,440	2,537,803	2,184,938	1,915,702	1,566,570	2,155,491	3.74
Oregon	2,261,500	2,610,273	2,291,747	2,197,584	2,341,609	2,340,543	4.05
N. Dakota	1,870,117	1,485,147	1,341,353	1,301,343	805,762	1,360,744	2.36
Utah	1,599,994	1,702,086	1,462,554	1,485,345	1,685,534	1,587,103	2.75
Ohio	1,560,987	1,921,940	1,256,655	1,540,874	1,489,899	1,554,071	2.69
Arizona	925,000	869,566	685,973	271,532	.....	688,018	1.19
Texas	890,686	1,950,124	1,581,836	1,316,937	1,661,714	1,480,259	2.56
Iowa	766,659	619,419	577,786	625,865	562,698	630,485	1.09
Kansas	633,797	858,898	.....	.....	.....	746,348	1.29
Maine	446,580	220,923	112,207	19,427	.....	199,784	.35
New York .....	.....	104,973	78,195	104,651	82,042	92,465	.16
TOTAL—Cwt. ..	63,464,106	65,599,874	50,242,317	53,293,073	52,857,258	57,735,188	100.00
TOTAL—Short tons raw value..	3,395,330	3,509,593	2,687,964	2,851,179	2,827,863	3,096,155	.....

¹Partly estimated. ²Where there has been production in a State less than 5 years, the average is for the years of actual production.

Statistics by crop year, which is for spring planting and fall harvesting in first year named, except in Imperial Valley of California, where figure is for fall planting in first year named and spring harvesting in following year. Sugar Beets are grown also in Illinois, Indiana, and New Mexico and processed in plants located in states listed above.

Source: United States Beet Sugar Association, Washington, D.C.

*1970 figures not available.

LOUISIANA—SUGAR PRODUCTION—ACREAGE—YIELD

Crop Year	Sugarcane Used for Sugar			Sugar Produced		Raw Sugar 96* made per ton of sugarcane (Pounds) ¹
	Acreage harvested (1000 acres)	Average yield of cane per acre (Tons)	Production (1,000 tons)	Raw Value Basis ¹ (In thousands of short tons)	Equivalent refined ²	
1919-20.....	179	10.5	1,883	124	116	132
1920-21.....	183	13.6	2,493	173	162	139
1921-22.....	226	18.5	4,181	331	309	158
1922-23.....	242	15.6	3,778	301	281	159
1923-24.....	215	11.1	2,387	165	154	138
1924-25.....	163	7.5	1,228	90	84	147
1925-26.....	190	13.9	2,644	142	133	107
1926-27.....	128	6.8	864	48	45	111
1927-28.....	73	13.2	962	72	67	150
1928-29.....	130	14.3	1,860	135	126	145
1929-30.....	185	15.8	2,918	204	190	140
1930-31.....	175	14.6	2,559	188	176	147
1931-32.....	169	13.2	2,232	160	150	143
1932-33.....	208	13.9	2,886	228	213	158
1933-34.....	197	13.2	2,600	209	195	161
1934-35.....	222	14.3	3,164	234	219	148
1935-36.....	239	17.5	4,183	339	317	162
1936-37.....	227	21.4	4,854	386	361	156
1937-38.....	266	19.7	5,241	401	375	153
1938-39.....	272	21.5	5,859	491	459	168
1939-40.....	234	21.7	5,084	436	408	172
1940-41.....	211	13.8	2,923	234	219	160
1941-42.....	224	17.6	3,947	322	301	163
1942-43.....	269	17.6	4,734	397	371	168
1943-44.....	257	20.9	5,388	432	404	160
1944-45.....	246	20.0	4,929	369	345	150
1945-46.....	234	21.9	5,128	370	346	144
1946-47.....	255	17.6	4,484	331	309	148
1947-48.....	259	15.1	3,917	297	277	152
1948-49.....	274	19.2	5,257	393	367	150
1949-50.....	279	17.9	4,984	414	387	166
1950-51.....	273	19.5	5,312	451	421	170
1951-52.....	258	17.3	4,463	295	276	132
1952-53.....	274	20.7	5,667	451	422	159
1953-54.....	280	20.6	5,759	479	448	166
1954-55.....	247	22.8	5,625	478	447	170
1955-56.....	232	24.4	5,664	454	425	161
1956-57.....	203	23.7	4,817	429	401	178
1957-58.....	226	22.0	4,976	396	370	159
1958-59.....	219	22.0	4,869	443	414	182
1959-60.....	250	20.3	5,073	440	411	174
1960-61.....	255	21.9	5,583	470	439	169
1961-62.....	277	25.7	7,118	650	607	183
1962-63.....	254	20.9	5,315	472	441	178
1963-64.....	296	28.9	8,554	759	710	177
1964-65.....	325	22.7	7,383	573	536	155
1965-66.....	288	22.7	6,542	550	514	168
1966-67.....	288	22.7	6,563	562	526	171
1967-68.....	294	27.6	8,110	740	692	182
1968-69.....	282	26.1	7,377	669	625	181
1969-70.....	235	24.1	5,676	537	502	189
1970-71*....	266	26.1	6,927	602	563	174

* Preliminary.

¹ Production reported on 96° basis prior to 1934, raw value basis thereafter.

² Raw value multiplied by 0.9346.

Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.

FLORIDA — SUGAR PRODUCTION — ACREAGE — YIELDS

Crop Year	Sugarcane Used for Sugar			Sugar Produced		Raw Sugar 96* made per ton of sugarcane (Pounds) ¹
	Acres harvested (1000 acres)	Average yield of cane per acre (Tons)	Production (1,000 tons)	Raw Value Basis ¹ (In thousands of short tons)	Equivalent refined ²	
1928-29.....	0.7	18.6	13	1	1	115
1929-30.....	7	30.1	202	14	14	143
1930-31.....	12	28.8	351	27	25	152
1931-32.....	13	22.3	292	24	22	164
1932-33.....	13	33.4	421	37	35	177
1933-34.....	14	32.6	469	41	38	177
1934-35.....	14	27.8	383	28	26	148
1935-36.....	14	34.5	486	43	40	176
1936-37.....	17	34.0	565	52	48	184
1937-38.....	19	33.0	634	58	54	183
1938-39.....	24	36.4	882	93	87	211
1939-40.....	20	35.5	714	70	65	197
1940-41.....	29	32.1	933	98	91	209
1941-42.....	31	30.7	944	94	88	198
1942-43.....	21	30.6	648	61	57	187
1943-44.....	27	25.7	699	65	60	185
1944-45.....	27	28.8	780	69	64	176
1945-46.....	31	33.2	1,041	100	93	192
1946-47.....	32	32.6	1,037	94	88	181
1947-48.....	35	26.7	921	80	75	173
1948-49.....	35	28.7	1,010	80	75	158
1949-50.....	37	30.8	1,126	105	98	186
1950-51.....	37	31.3	1,169	109	102	186
1951-52.....	39	32.4	1,260	122	114	195
1952-53.....	43	34.9	1,495	154	144	207
1953-54.....	45	32.6	1,453	151	141	207
1954-55.....	39	32.6	1,258	132	123	210
1955-56.....	35	33.4	1,160	118	110	204
1956-57.....	30	39.7	1,197	128	120	214
1957-58.....	33	41.7	1,358	135	126	201
1958-59.....	34	37.8	1,303	135	126	208
1959-60.....	46.4	38.2	1,771	175	164	198
1960-61.....	48.9	31.8	1,554	160	150	205
1961-62.....	56.2	36.2	2,036	208	194	204
1962-63.....	114.3	35.4	4,050	380	355	188
1963-64.....	142.5	31.2	4,446	424	396	191
1964-65.....	219.8	29.3	6,439	574	536	178
1965-66.....	185.4	29.1	5,505	554	518	201
1966-67.....	190.7	31.8	6,057	652	609	215
1967-68.....	190.6	34.3	6,542	717	670	219
1968-69.....	182.1	29.5	5,368	546	510	203
1969-70.....	154.0	33.8	5,197	535	500	205
1970-71*.....	171.3	33.1	5,671	652	609	215

* Preliminary.

¹ Production reported on 96° basis prior to 1934, raw value basis thereafter.

² Raw value multiplied by 0.9346.

Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.

CANE SUGAR: PRODUCTION IN PUERTO RICO

Crop Year Ended	Acreage in Cane		Sugarcane Harvested		Sugar Produced, Raw Value	
	Grown	Harvested	Total	Per acre in cane harvested	Total	Per ton of cane harvested
	Acres	Acres	Tons	Tons	Tons	Pounds
1940.....	303,389	252,969	8,976,231	35.5	1,026,188	228.6
1945.....	335,791	288,617	7,994,229	27.7	970,751	242.9
1950.....	382,011	367,093	10,614,632	28.9	1,298,643	244.7
1955.....	439,035	361,053	9,872,968	27.3	1,166,026	236.2
1960.....	371,644	327,961	9,996,878	30.5	1,019,033	203.9
1961.....	361,990	328,138	10,749,805	32.8	1,109,232	206.4
1962.....	342,525	308,644	9,663,265	31.3	1,008,496	208.8
1963.....	337,526	303,041	10,122,518	33.4	989,235	195.5
1964.....	329,090	303,142	9,802,223	32.3	989,438	201.9
1965.....	316,263	287,644	8,806,972	30.6	896,943	203.7
1966.....	304,550	272,844	9,465,009	34.7	883,442	186.7
1967.....	280,851	263,336	8,160,195	31.0	818,294	200.6
1968.....	257,173	237,143	6,590,296	27.8	645,466	195.9
1969.....	235,166	180,069	5,901,967	32.8	483,532	163.9
1970.....	226,666	188,775	5,890,755	31.2	460,159	156.2

Source: Association of Sugar Producers of Puerto Rico.

CANE SUGAR: PRODUCTION IN CUBA

Crop Year ¹	Acreage in cane		Sugarcane harvested		Raw sugar produced	
	Grown	Harvested	Per acre	Total ²	Total ³	Per ton of sugarcane ²
	1,000 acres	1,000 acres	Short Tons	1,000 short tons	1,000 short tons	Pounds
1920...	2,085	2,041	18.78	38,335	4,243	221
1925...	2,695	2,469	21.09	52,068	5,894	226
1930...	2,800	2,648	16.40	43,435	5,305	244
1935...	1,974	1,643	15.12	24,847	2,883	232
1940....	2,325	1,883	16.58	31,220	3,157	202
1945....	2,528	2,343	12.90	30,224	3,923	260
1950....	3,014	2,885	16.26	46,916	6,126	261
1955....	3,554	2,059	18.64	38,381	5,001	261
1960....	3,457	3,104	16.82	52,212	6,462	247
1961....	N. A.	3,113	N. A.	N. A.	7,459	N. A.
1962....	N. A.	N. A.	N. A.	N. A.	5,308	N. A.
1963....	N. A.	N. A.	N. A.	N. A.	4,211	N. A.
1964....	N. A.	N. A.	N. A.	N. A.	4,400	N. A.
1965....	N. A.	N. A.	N. A.	N. A.	6,600*	N. A.
1966....	N. A.	N. A.	N. A.	N. A.	6,200*	N. A.
1967....	N. A.	N. A.	N. A.	N. A.	6,874*	N. A.
1968....	N. A.	N. A.	N. A.	N. A.	5,869*	N. A.
1969....	N. A.	N. A.	N. A.	N. A.	6,100*	N. A.
1970....	N. A.	N. A.	N. A.	N. A.	8,250*	N. A.

* International Sugar Council.

¹ Harvesting usually begins in January and extends through June. The length of the growing season is normally 12 months.

² Some years cane for invert molasses is included in the cane production.

³ Excludes liquid and green sugar.

N. A.—Not available.

Source: Foreign Agricultural Service, U.S. Department of Agriculture.

CANE SUGAR: PRODUCTION IN THE PHILIPPINE ISLANDS, 1921-1970

Crop Year ¹	Sugarcane				Sugar Produced			Molasses
	Acreage		Calculated production for centrifugal sugar		Centrifugal as made	Muscovada and Panocha	Centrifugal sugar made per ton sugarcane ⁵	Produced
	Total ²	Harvested for centrifugal sugar	Per acre ³	Total ⁴				
	1,000 acres	1,000 acres	Short tons	1,000 short tons	1,000 short tons	1,000 short tons	Pounds	1,000 gallons
1921.....	595	.....	.....	1,981	219	314	221	5,597
1922.....	562	.....	.....	2,106	259	217	246	2,609
1923.....	561	.....	.....	2,717	325	204	239	786
1924.....	592	.....	.....	4,954	552	228	223	1,277
1925.....	573	.....	.....	3,445	408	200	237	1,568
1926.....	587	.....	.....	5,023	587	180	234	1,153
1927.....	586	.....	.....	5,483	635	173	232	2,959
1928.....	637	.....	.....	6,771	769	157	227	5,405
1929.....	640	417	17.63	7,351	867	117	236	6,675
1930.....	633	387	20.20	7,816	871	87	223	11,817
1931.....	625	458	21.36	9,781	1,100	74	225	11,407
1932.....	663	512	22.36	11,449	1,285	58	224	25,372
1933.....	756	559	25.67	14,350	1,598	55	223	68,166
1934.....	522	325	18.59	6,044	700	54	232	52,993
1935.....	620	425	19.05	8,095	979	64	242	46,740
1936.....	635	436	21.87	9,535	1,118	68	234	52,836
1937.....	563	453	20.53	9,302	1,055	61	227	49,955
1938.....	568	392	23.54	9,227	1,092	57	237	49,448
1939.....	590	412	21.35	8,810	1,044	63	237	50,578
1940.....	551	373	23.42	8,734	1,035	113	237	49,163
1941-44	not available							
1945.....	72	16	7.31	117	13	56	222	546
1946.....	101	48	15.96	766	85	54	222	3,579
1947.....	203	182	19.70	3,586	398	38	222	16,972
1948.....	319	297	20.74	6,160	730	35	237	31,165
1949.....	346	316	19.18	6,062	693	36	229	28,469
1950.....	417	382	21.41	8,177	935	51	229	37,988
1951.....	496	466	21.36	9,952	1,077	62	216	51,957
1952.....	547	517	20.21	10,477	1,134	68	217	50,312
1953.....	655	545	23.92	13,038	1,434	76	220	64,082
1954.....	661	528	23.71	12,516	1,372	58	219	62,421
1955.....	596	468	23.23	10,871	1,219	60	224	49,108
1956.....	580	444	22.39	9,941	1,143	73	230	41,812
1957.....	599	463	25.30	11,712	1,378	75	235	60,091
1958.....	623	484	27.82	13,467	1,512	78	225	68,184
1959.....	597	504	27.29	13,754	1,529	64	222	66,053
1960.....	584	525	24.64	12,941	1,563	70	241	63,194
1961.....	592	535	26.74	14,306	1,618	41	226	67,547
1962.....	640	588	26.99	15,685	1,714	50	219	83,553
1963.....	760	722	24.13	17,421	1,856	52	213	101,480
1964.....	870	809	19.38	15,680	1,767	62	225	100,239
1965.....	790	735	19.92	14,641	1,590	63	217	79,042
1966.....	769	708	23.78	16,840	1,718	62	204	83,057
1967.....	810	756	22.47	16,989	1,759	63	207	94,192
1968.....	847	793	22.86	18,130	1,760	65	194	106,417
1969.....	897	840	25.67	21,561	2,100	63	195	131,455
1970.....	996	914	25.83	23,611	2,300	58	195	142,723

¹ Harvesting begins in October. The length of the growing season being about 11 months.

² Total harvested acreage includes acreage for both centrifugal and noncentrifugal sugar. The acreage for noncentrifugal sugar has been estimated on the assumption 1 acre of cane yields about 1.5 tons of noncentrifugal sugar for the year 1949.

³ Cane production divided by harvested acreage.

⁴ Prior to 1950, calculated cane production is the quantity of cane ground for centrifugal sugar, estimated on the basis of the reported yield of sugar per ton of cane. From 1950 to date, the cane production is reported.

⁵ As reported prior to 1950 and from 1952 to 1957. Other years computed.

Source: Foreign Agricultural Service, U. S. Department of Agriculture.

EDIBLE SIRUPS: UNITED STATES PRODUCTION, FOREIGN TRADE, AND INDICATED DOMESTIC CONSUMPTION, 1935-39, 1940-1944 AND 1945-49 AVERAGES, AND 1950-70

(000 GALLONS)

Year	PRODUCTION ¹								IMPORTS				
	SIRUPS								Maple Sirup	Edible Molasses and Cane Sirup ³	Shipments from Territories		
	Corn	Cane	Sorghum	Maple ²	Refiners	Edible Molasses	Honey	Total			Honey	Honey	Total
1935-39	91,110	22,855	14,328	2,723	2,930	4,970	15,343	154,259	101	2,048	15	182	2,346
1940-44	137,377	18,741	11,409	2,571	7,804	6,273	16,709	200,884	268	4,083	1,429	135	5,915
1945-49	143,145	20,255	8,851	1,510	11,648	8,971	18,842	213,222	319	1,074	1,275	89	2,757
1950	130,448	9,745	3,539	2,006	4,005	3,314	19,780	172,837	479	2,214	1,020	30	3,743
1951	131,831	8,775	3,671	1,742	4,971	4,339	21,923	177,252	323	2,050	692	4	3,065
1952	127,405	5,510	2,856	1,603	3,405	3,284	23,091	167,154	522	5,710	720	.....	6,952
1953	131,767	5,540	2,418	1,208	3,907	4,077	18,996	167,913	442	1,793	831	.....	3,066
1954	133,071	4,805	2,552	1,672	3,814	2,958	18,372	167,244	371	2,015	777	.....	3,163
1955	138,226	4,730	2,405	1,578	3,853	2,820	21,666	175,278	457	2,305	837	.....	3,599
1956	141,504	4,990	3,594	1,529	3,882	3,193	18,169	176,861	643	2,046	406	.....	3,095
1957	142,089	3,965	2,516	1,697	3,620	2,384	20,447	176,748	757	573	404	.....	1,734
1958	153,481	3,135	2,282	1,392	4,892	2,553	22,116	189,851	656	1,286	335	.....	2,277
1959	162,197	3,617	2,286	1,137	3,999	3,084	20,083	196,403	691	2,138	383	.....	3,212
1960	169,776	3,676	1,943	1,143	4,134	2,714	20,611	203,997	908	1,884	1,049	.....	3,841
1961	180,397	3,519	.....	1,524	3,846	3,379	21,721	214,386	904	911	768	.....	2,583
1962	201,259	3,303	.....	1,460	2,691	3,075	21,189	232,977	929	3,827	604	.....	5,360
1963	215,573	2,702	.....	1,143	2,769	2,772	22,647	247,606	1,068	1,706	221	.....	2,995
1964	238,832	2,814	.....	1,546	2,862	2,685	21,323	270,062	666	2,119	417	.....	3,202
1965	243,682	2,989	.....	1,266	2,994	2,648	20,654	274,233	879	3,349	1,127	.....	5,355
1966	252,337	2,923	.....	1,476	2,493	2,563	20,916	282,708	938	3,061	806	.....	4,805
1967	255,860	2,121	.....	979	2,402	2,477	18,860	282,699	1,147	1,065	1,416	.....	3,628
1968	274,000 ⁴	2,346	.....	966	2,561	2,466	16,899	299,238	988	3,732	1,427	.....	6,147
1969	282,000 ⁴	2,661	.....	1,032	2,235	2,532	23,873	374,333	1,185	2,266	1,244	.....	4,695
1970 ⁵	297,000 ⁴	.....	.....	1,110	1,695	2,121	19,830	321,756	956	3,007	749	.....	4,712

Year	EXPORTS				INDICATED DOMESTIC CONSUMPTION					
	Corn Sirup	Edible Molasses and Sirup including Maple ⁵		Honey	Total	SIRUPS				
		Maple ⁵	.....			Corn	Maple	Sorghum	Cane Sirup, Refiners Sirup, and Edible Molasses	Honey
1935-39	3,027	765	.....	191	3,983	88,083	2,824	14,328	32,038	15,349
1940-44	2,792	482	.....	78	3,352	134,585	2,839	11,409	36,419	18,195
1945-49	3,220	1,108	.....	244	4,572	139,925	1,830	8,851	40,840	19,944
1950	3,761	242	.....	801	4,804	126,687	2,485	3,539	19,036	20,029
1951	4,287	231	.....	1,075	5,593	127,544	2,065	3,671	19,904	21,540
1952	3,101	153	.....	1,968	5,222	124,304	2,125	2,856	17,756	21,843
1953	3,241	267	.....	2,789	6,297	128,526	1,650	2,418	15,050	17,038
1954	3,233	272	.....	2,061	5,566	129,838	2,043	2,552	13,320	17,088
1955	3,386	248	.....	1,739	5,373	134,840	2,035	2,405	13,460	20,764
1956	3,189	249	.....	1,548	4,986	138,315	2,172	3,594	13,862	17,027
1957	2,745	250	.....	1,681	4,676	139,344	2,454	2,516	10,292	19,200
1958	2,396	165	.....	1,902	4,463	151,085	2,048	2,282	11,701	20,549
1959	2,245	155	.....	1,062	3,462	159,952	1,828	2,286	12,683	19,404
1960	1,836	182	.....	797	2,815	167,940	2,051	1,943	12,226	20,863
1961	1,370	173	.....	607	2,150	179,027	2,428	.....	11,482	21,882
1962	1,514	140	.....	1,158	2,812	199,745	2,389	.....	12,756	20,635
1963	2,055	192	.....	2,125	4,372	213,518	2,211	.....	9,757	20,743
1964	1,632	205	.....	760	2,597	237,200	2,212	.....	10,275	20,980
1965	1,003	.....	.....	1,166	2,169	242,679	2,145	.....	11,980	20,615
1966	1,038	.....	.....	1,219	2,257	251,299	2,414	.....	11,040	20,503
1967	1,113	.....	.....	986	2,099	254,747	2,126	.....	8,065	19,290
1968	1,100 ⁴	.....	.....	864	1,964	272,900	1,954	.....	11,105	17,462
1969	1,300 ⁴	.....	.....	833	2,133	280,700	2,217	.....	9,694	24,284
1970 ⁵	1,300 ⁴	.....	.....	688	1,988	295,700	2,066	.....	6,823	19,891

¹Production of cane sirup, sorghum sirup, and edible molasses is of the fall of the preceding year. Estimates of sorghum discontinued beginning 1961; cane sirup discontinued beginning 1969. ²Does not include varying quantities produced on nonfarm lands in Somerset County, Maine. ³U.S. Department of Commerce molasses and sugar sirups series, less liquid sugar imports reported to Sugar Division, Agricultural Stabilization and Conservation Service. ⁴Unofficial estimates. ⁵Preliminary. ⁶Assumed to be largely refiners' sirup. Beginning 1965, data not available because of change in export classification.

Source: Economic Research Service, U.S. Department of Agriculture.

Part III

U.S. SUGAR LAWS

Laws governing sugar in the United States are as old as the country itself. Following is a brief review.

SUGAR'S TAXATION HISTORY

Sugar is one of the world's most regulated commodities. Approximately 90 percent of total world production comes under some type of internal or external law or regulation.

Sugar in the United States has been under government regulation since the American Revolution.

The first piece of general legislation enacted by the first U.S. Congress in 1789 was the first sugar tariff of the United States.

It provided for a duty of one cent per pound on brown sugars; three cents on loaf; and, one and one-half cents on all other types of sugars.

From that time on, sugar tariffs provided a major source of revenue until the imposition of Federal income and corporate taxes.

Accordingly, the rates had a tendency to fluctuate somewhat depending upon the condition of the national treasury.

Because the purity of present-day refined sugars was unknown in the early days of the republic, complex tables of rates were required to assess the widely varying qualities of sugar which came into the U.S. from many parts of the world.

The Tariff Act of 1816 taxed loaf sugar at 12 cents per pound. There were other high tariffs during the Civil War period, after which tariff rates generally declined.

The Reciprocity Treaty of 1875 between the Kingdom of Hawaii and the United States provided for free entry of Hawaiian Sugar. Annexation in 1898 made Hawaii a domestic producer.

For four years beginning in 1890, sugar was placed on the free lists, and a bounty to encourage production was paid to domestic producers. Louisiana growers benefited most from this as the beet sugar industry was just getting underway and Hawaii was not yet a part of the United States.

The Spanish American War, beginning in 1898, had a major influence on American sugar supplies.

Puerto Rico in 1900 was given a preferential reduction in tariff charges. A year later, her sugar was placed on the free list.

The Philippines in 1902 received a 25 percent preferential tariff reduction. In 1909, she was permitted free entry on the first 300,000 tons of sugar exported to the U.S. In 1914, all of her sugar sales to the U.S. were placed on the free list.

Cuba in 1903 received a preferential tariff reduction of 20 percent below the full world tariff rate. Up to the early 1960's, Cuba retained a preferred tariff position among foreign suppliers of the American market. Cuba was considered America's sugar warehouse.

Because of political developments within Cuba and that country's slide into the Communist orbit, diplomatic relations between Cuba and the U.S. were severed in 1961 and its quota

SUGAR — LOW PRICED FOOD

Sugar in the United States is a low-cost food. The average American must work only 2.3 minutes to earn enough money to purchase a pound of refined sugar at retail—one of the smallest time-worked periods among modern nations of the world.

WORK TIME NEEDED TO PURCHASE ONE POUND SUGAR AT RETAIL, 1970

Country	Avg. Hourly Earnings in Mfg. ¹ U.S. Dollars	U.S. Cents Per Min.	Retail Price for Sugar 1968 ² (U.S. Cts.)	Minutes Worked Per Lb. of Sugar	Index U.S.= 100
U.S.	\$3.36	5.60¢	13 ¢	2.3	100
Canada	2.88	4.80	11	2.3	100
Japan	0.93	1.55	16.4	10.6	461
Austria	1.11	1.85	12.4	6.7	291
France	1.04	1.73	12.5	7.2	313
Italy	1.10	1.83	17.7	9.7	422
Netherlands	1.30	2.17	14.7	6.8	296
Sweden	2.33	3.88	13.7	3.5	152
Switzerland	1.60	2.67	9.9	3.7	161
U.K.	1.32	2.20	9.0	4.1	178
W. Germany	1.61	2.68	14.7	5.5	239

¹ U.S. Dept. of Labor—Division of Foreign Labor Statistics—available only for developed countries.

² International Sugar Council.

subsequently allocated to other suppliers on a formula basis established by Congress.

The Philippines, granted independence by the United States in 1946, stayed on the free list until December 31, 1955. Its preferential tariff treatment phases out in 1974 at which time it will pay the standard tariff rate.

U.S. DUTIES ON FOREIGN SUGAR

Excluding those areas which have received preferential treatment, the tariff duty paid by other suppliers of the U.S. market has been changed eight times over the years since 1897 when it was set at 1.685 cents per pound. It dipped slightly in the 1914-21 period and then

U. S. SUGAR CONSUMPTION* AND POPULATION

Five Year Intervals—1863-1928

Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)	Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)
1863....	317,018	33,365	17.76	1946....	5,620,708	141,389	74.31
1868....	579,551	36,973	29.30	1947....	7,447,834	144,126	96.59
1873....	897,072	41,677	40.23	1948....	7,342,971	146,631	93.61
1878....	926,929	47,598	36.40	1949....	7,580,225	149,188	94.97
1883....	1,402,577	53,693	48.83	1950....	8,279,330	151,683	102.02
1888....	1,746,385	59,974	54.43	1951....	7,736,573	154,360	93.68
1893....	2,283,985	66,970	63.75	1952....	8,104,160	157,028	96.47
1898....	2,400,278	73,494	61.05	1953....	8,484,900	159,636	99.35
1903....	3,055,492	80,983	70.52	1954....	8,206,606	162,417	94.44
1908....	3,817,849	89,073	80.11	1955....	8,399,081	165,270	94.99
1913....	4,485,778	96,512	86.88	1956....	8,903,877	168,176	98.96
1918....	4,189,134	103,588	75.59	1957....	8,733,988	171,198	95.36
1923....	5,729,172	111,537	96.01	1958....	9,030,271	174,060	96.97
1928....	6,658,400	119,862	103.83	1959....	9,181,146	177,261	96.81

Yearly Intervals—1929-1970

1929....	6,835,360	121,526	105.13	1964....	9,670,693	191,206	94.54
1930....	6,857,760	123,077	104.15	1965....	10,020,287	193,587	96.75
1931....	6,702,080	124,039	100.99	1966....	10,299,344	195,829	98.31
1932....	6,438,880	124,840	96.40	1967....	10,245,342	197,962	96.74
1933....	6,387,041	125,579	95.07	1968....	10,927,340	199,942	102.15
1934....	6,331,585	126,374	93.64	1969....	10,654,760	201,897	98.64
1935....	6,633,928	127,250	97.44	1970....	11,309,516	204,085	103.58
1936....	6,706,195	128,053	97.89				
1937....	6,671,402	128,825	96.79				
1938....	6,643,253	129,825	95.64				
1939....	6,867,518	130,880	98.08				
1940....	6,890,668	132,122	97.49				
1941(a)	8,069,457	133,402	113.06(a)				
1942....	5,466,204	134,860	75.76				
1943....	6,334,713	136,739	86.59				
1944....	7,147,350	138,397	96.53				
1945....	6,040,569	139,928	80.69				

* Theoretical consumption. (Actually deliveries for consumption, and includes deliveries for U.S. military forces at home and abroad.)

** Includes Alaska, excludes Hawaii.

Source: Lamborn Sugar Market Report.

(a) During 1941, a large quantity of the deliveries went into the building up of the "invisible" supply, and was not consumed during that year. In 1942, the major portion of this invisible supply was recaptured by the OPA and reallocated for consumption during 1942.

climbed to 2.5 cents a pound during the 1930-34 period and subsequently declined to its present level of 0.625 cents beginning in 1951.

MODERN U.S. SUGAR LEGISLATION

The Depression of 1929 drove home the point that tariffs alone could not be the sole tool to regulate U.S. sugar supplies. In 1934, the Jones-Costigan Act amended the Agricultural Adjustment Act to include sugar as a basic commodity under the general farm program.

It provided for a processing tax on refined sugar, for benefit payments to sugarbeet and sugarcane growers under production adjustment contracts, and for quotas for domestic and foreign areas supplying the U.S. market.

The Supreme Court in 1936 declared the benefit payments and taxes on sugar unconstitutional, but quotas were not questioned and continued in effect.

The Sugar Act of 1937, which embodied the basic principles of the Jones-Costigan Act, was signed into law September 1 of that year and continued in effect until succeeded by the current law, the Sugar Act of 1948. However, the quota system was suspended for several years during the 1940's because of World War II.

The Sugar Act of 1948 has been extended seven times with various amendments. The seventh extension was signed by President Richard M. Nixon in October 1971. The Act was extended for three years until December 31, 1974.

U.S. SUGAR ACT

The United States Sugar Act, generally called the Sugar Act of 1948, as amended, is a federal law designed to achieve three major goals:

1. To assure consumers of adequate supplies of sugar at reasonable prices.
2. To maintain the domestic sugar industry.
3. To promote the export trade of the United States.

It was also designed to be self-supporting.

To a remarkable degree it has achieved these goals.

Since 1934 when the present law (or its predecessors) came into force, abundant supplies of sugar have been available to consumers at fair and reasonable prices. A vigorous sugar industry has developed within our national borders, yet day after day our ports receive sugar cargoes from friendly nations around the world.

There have been social gains too. Notably in the improvement of wages and working conditions of farm laborers.

The program has put more than \$600 million into the U.S. Treasury above its costs.

Finally, the cost of sugar has not kept pace with other food commodities. Only once in nearly four decades have sugar prices equalled the price index generally. At all other times,

the price of sugar has been well below the index of all food prices.

HOW THE SUGAR ACT WORKS

The Act directs the Secretary of Agriculture in October of each year to estimate the consumption of sugar in the U.S. for the year ahead.

Once he has arrived at an estimate, the total amount of sugar it represents is allocated among domestic and foreign sources of supply by a formula set down in the Act. These allocations are quotas—the amount of sugar each area is permitted to market in the United States in the ensuing year.

Roughly 40 percent of the total is assigned to 34 foreign countries. Twenty-one of them are in the Western Hemisphere.

If, as the year advances, it appears that the Secretary of Agriculture's estimate of consumption is too high or too low, he may (indeed the law requires it) revise the estimate to meet the changed conditions. In the event that any area—domestic or foreign—is unable to fill its quota, the Secretary reallocates the deficit to fill the void and thus maintain an even flow of sugar to consumers.

Deficits in domestic areas and foreign countries are reallocated to foreign countries.

PRICE OBJECTIVE

Under the 1971 extension of the Act, the Congress directed the Secretary, in establishing and revising the consumption estimate, to make available a supply of sugar that will meet the needs of consumers and attain the price objective.

The price objective is defined in the Act in terms of a price for raw sugar that will maintain the same relationship to the simple average of the index of prices paid by farmers (parity index) and the wholesale price index (1967=100 for both) as the relationship which existed between the average of the monthly price objective calculated under the 1965 Amendments for September 1, 1970-August 31, 1971, and the simple average of such indexes during the same period September 1, 1970-August 31, 1971.

The Act further provides that in order to attain the price objective on an annual average basis, the Secretary cannot change the estimate of consumption whenever the average price of raw sugar for seven consecutive market days is within a specified range of the price objective (3 percent for November through February, 4 percent for other months). Conversely, the Secretary is required to change the consumption estimate whenever the average price of raw

Sugar Prices and Per Capita Disposable Income, 1910-1970

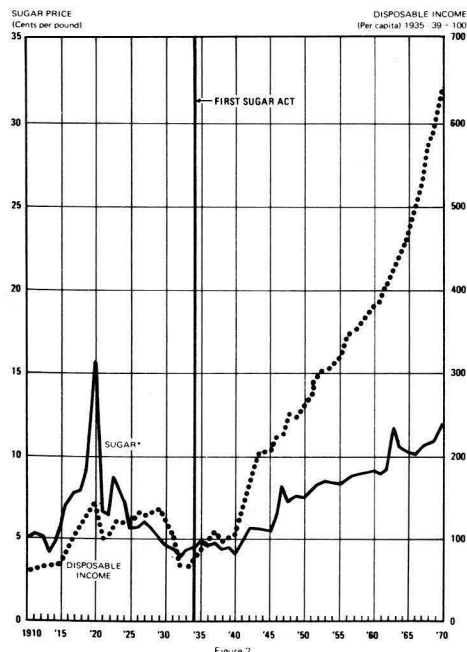


Figure 2

* REFINED SUGAR PRICES, NET CASH, WHOLESALE, NORTHEAST
SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE

sugar moves out of the "corridor" for seven consecutive market days.

By using as the price guide the average of the index of prices paid by farmers and the wholesale price index, the Congress has sought to accomplish more effectively two of the main objectives of the Act:

- (1) Protect the consumer against runaway sugar prices; and
- (2) provide the farmer some assurance of the price he may expect to receive for his crop.

This technique permits moderate increases in sugar prices as the cost of farming and family living increases, thereby providing the farmer a degree of economic stability and the consumer a measure of protection against undue price increases. The Congress has sought to assure the farmer that if he had to sell 350 tons of sugarcane to buy a pickup truck in 1967, that is all he will have to sell to make the same purchase at the present time. Thus the system provides a real measure of stability for both the farmer and the consumer.

ORDERLY MARKET

The orderly operation of a quota system implies the existence of controls to prevent any single area from usurping more than its share of the market.

Control over foreign sugar supplies is rela-

tively simple. Customs officers can turn back "over-quota" sugar at our seaports. Customs can also prevent the entry of sugar into the United States from countries which have no quotas.

In the case of domestic production, however, controls of a different nature are required.

For example, if it appears that production of any domestic area will so far exceed its quota that disorderly marketing will result, or that all sellers will not have an equal opportunity to sell their fair share, the Secretary of Agriculture may impose marketing allotments.

These allotments divide an area's quota among the individual sugar companies in the area after consideration of individual company production records, marketing histories and so on. When it is necessary to bring production into line with quotas and inventory requirements, the Secretary also is authorized to impose acreage restrictions on the domestic production of sugarcane and sugarbeets.

An orderly market achieved through quotas and, if necessary, acreage restrictions or marketing allotments, are tools supplied by the Sugar Act to help assure an adequate supply of sugar at a reasonable price to consumers.

SELF-SUPPORTING PROGRAM

While quotas seem to receive the major attention in discussions of the U.S. sugar program, it is the unique financing program—a tax-payment arrangement—that makes the program operate.

The American farmer is still master of his acres and no Government agency can dictate

Refined Sugar Prices, and Index of All Food Prices At Wholesale, 1860—1970

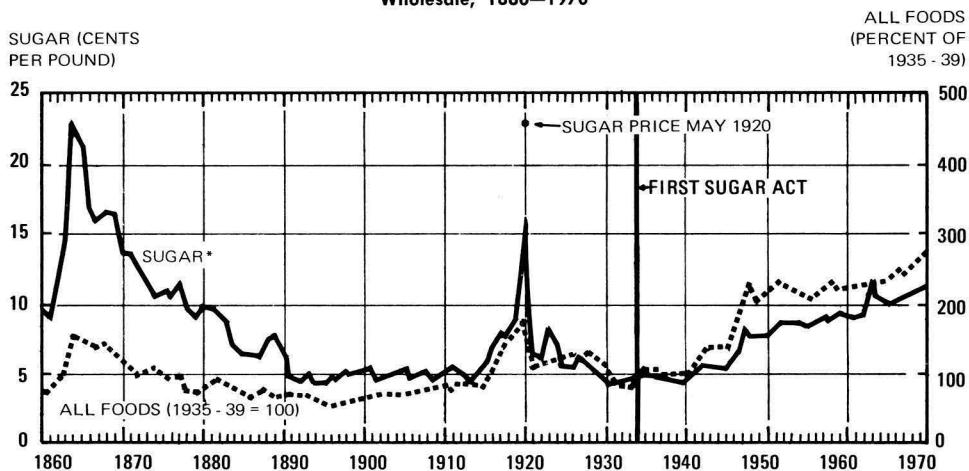


Figure 1

* REFINED SUGAR PRICES, NET CASH, NORTHEAST

the use to which his land is put in the absence of a *quid pro quo*.

In sugar, the "quid" is the so-called "conditional payment" for which a farmer qualifies only if he accepts the "quo" which is:

1. To conform to any limitation on production that may be imposed by the Secretary of Agriculture.
2. To pay wages to field workers at rates not less than those determined by the Secretary to be fair and reasonable.
3. To abide by a strict prohibition of child labor.
4. If the producer is also a processor, to pay others for their beets and cane at rates not less than those determined by the Secretary to be fair and reasonable.

The conditional payment system with its production controls makes it possible to adapt the domestic industry to the restraints implicit in a quota system.

It has also brought about a marked improvement in the wages of farm laborers, which are often higher than the minimum wages prescribed by law for industrial workers.

CONDITIONAL PAYMENT RATES

The base rate for conditional payments is 80-cents a hundred pounds (\$16 a 2,000-pound ton) on the first 350 tons of sugar a farmer produces. Thereafter, the rate slides down to a minimum of 30-cents a hundred pounds (\$6 a ton) on all sugar produced in excess of 30,000 tons.

CHARGES AGAINST SUGAR QUOTAS 1950, 1955, 1960, 1962-70 (Short tons, raw value)

Area	1950	1955	1960	1962	1963	1964
Domestic beet	1,748,701	1,797,327	2,164,692	2,415,182	2,964,790	2,698,514
Mainland cane	517,985	499,623	619,047	787,354	1,072,202	905,511
Hawaii	1,144,930	1,052,004	844,788	1,084,179	1,032,541	1,110,000
Puerto Rico	1,052,706	1,079,562	895,784	904,030	875,245	792,788
Virgin Islands	10,694	9,942	6,954	10,751	15,000	15,856
Philippines Islands						
Quota Sugar	473,614	977,375	979,783	1,073,763	1,194,833	1,171,090
Non-Quota Sugar				182,401		
Global Quota Sugar						46,269
Cuba	3,264,303	2,861,937	2,393,663			
Other Foreign Countries: ¹						
Quota Sugar	61,396	118,524	434,208	1,336,799	1,649,734	1,421,462
Non-Quota Sugar			1,187,487	1,404,773		
Global Quota Sugar				597,989	1,710,648	947,717
TOTAL	8,274,329	8,396,294	9,526,406	9,797,221	10,514,993	9,109,207

Area	1965	1966	1967	1968	1969	1970
Domestic beet	3,024,978	3,024,142	2,823,695	3,085,242	3,215,577	3,569,398
Mainland cane	1,099,163	1,099,929	1,169,286	1,203,921	1,169,303	1,307,714
Hawaii	1,136,753	1,200,227	1,252,543	1,191,704	1,159,820	1,145,486
Puerto Rico	829,570	711,325	705,113	504,081	341,231	352,331
Virgin Islands	4,282	5,405				
Philippines Islands						
Quota Sugar	1,178,216	1,186,123	1,122,767	1,124,002	1,124,431	1,298,226
Non-Quota Sugar						
Global Quota Sugar						
Cuba						
Other Foreign Countries: ¹						
Quota Sugar	2,647,150	3,128,093	3,310,126	3,841,660	3,724,608	3,878,794
Non-Quota Sugar						
Global Quota Sugar						
TOTAL	9,920,112	10,355,244	10,383,530	10,950,610	10,734,970	11,551,949

THE SUPPORTING TAX

Side by side with its provisions for conditional payments, the Internal Revenue Code imposes a tax on all sugar sold within the United States, whether domestic or foreign.

The rate of the tax is 53-cents per hundred pounds of refined sugar. This amount is less than the base rate for conditional payments to small farmers but substantially more than the rate of payment to large producers. It is equal to a tax of 50-cents per hundred pounds of raw sugar.

The tax is levied on all sugar sold in the United States—foreign or domestic—but conditional payments are made only to U.S. producers including those in Puerto Rico.

As a result, the arrangement consistently shows a net gain to the U.S. Treasury. In fact, collections by the Treasury under the Act have exceeded all expenditures, including the costs of administration and payments to producers, by \$600 million since 1934.

SEPARATE LEGISLATION

The Sugar Act is separate legislation, requiring specific Congressional action apart from the general U.S. agricultural program.

CHARGES AGAINST DIRECT-CONSUMPTION SUGAR QUOTAS 1950, 1955, 1960, 1962-1970

Area	1950	1955	1960	1962	1963	1964
Hawaii	29,639	29,609	5,942	5,695	26	1,133
Puerto Rico	125,871	125,669	154,339	149,945	154,705	146,505
Philippine Islands	6	9,600	43,342	46,757	36,735	56,756
Cuba	374,731	378,671	312,194	.....	.....	.....
Other Foreign Countries: ²						
Quota Sugar		40,558	70,630	54,656	13,970	3,986
Non-Quota Sugar..		.....	17,484	18,304	.....	.....
TOTAL	530,247	584,107	603,931	275,357	205,436	208,380
Area	1965	1966	1967	1968	1969	1970
Hawaii	3,290	293	563	4,285	4,717	7,934
Puerto Rico	144,892	155,158	160,815	164,508	129,959	122,258
Philippine Islands	34,805	14,781	20,281	20,316	5,393	10,357
Cuba .....	.....	.....	.....	.....	.....	.....
Other Foreign Countries: ²						
Quota Sugar	6,396	7,255	9,168	9,167	8,544	9,167
Non-Quota Sugar..	.....	.....	.....	.....	.....	.....
TOTAL	189,383	177,487	190,827	198,276	148,613	149,716

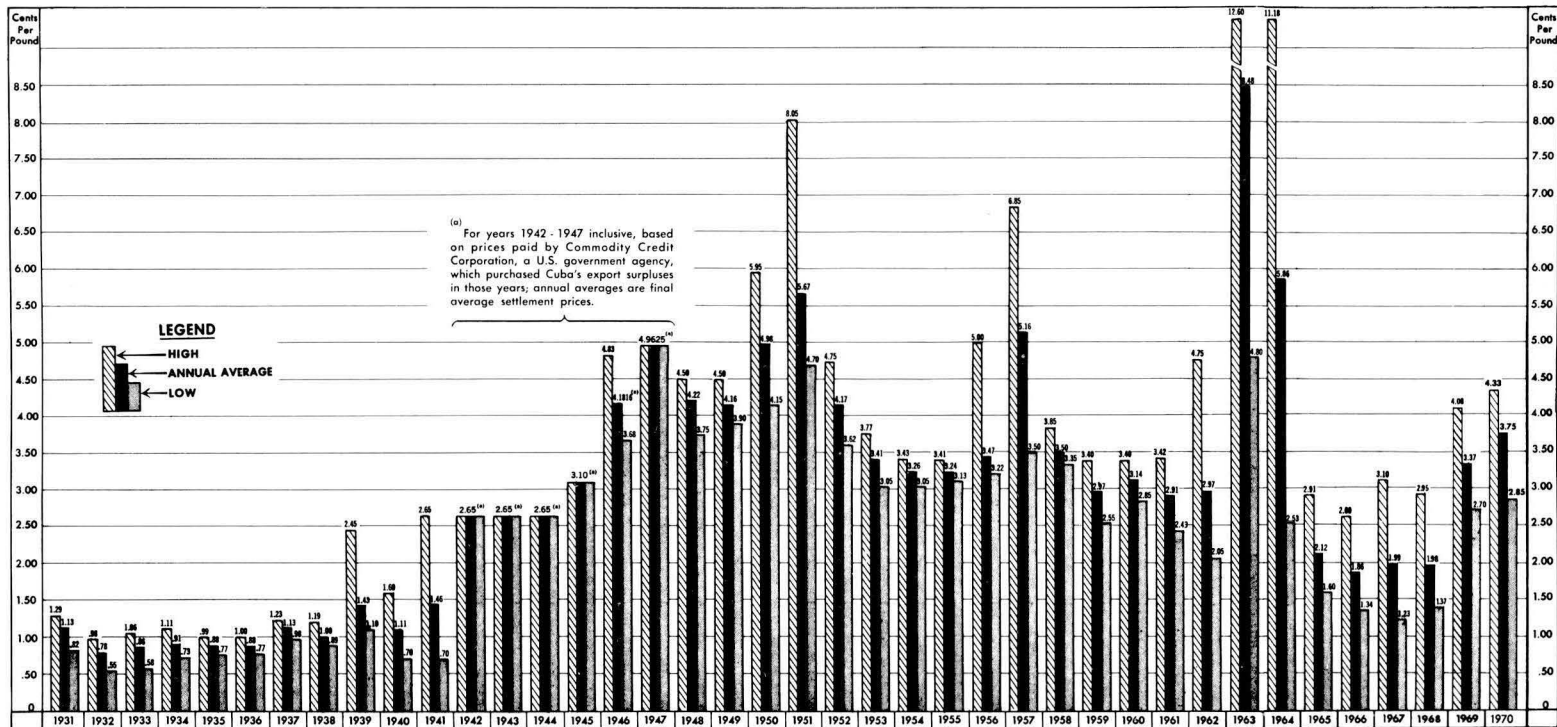
¹Excludes first ten tons imported. ²Prior to 1953 there was no restriction in direct-consumption imports from full-duty countries.

Source: Agricultural Stabilization Service, U.S. Department of Agriculture.

LAMBORN'S CHART OF WORLD SUGAR PRICES* — 1931 - 1970

HIGHS - ANNUAL AVERAGES - LOWS

In Cents per Pound - Raw Sugar 96°



* F.A.S. Cuba Basis for 1931-1940; F.O.B. Stowed Bagged Basis for 1941-1970

Note: Trading commenced on May 5, 1970 in the No. 11 Contract for World Raw Sugar (A.S. Stowed, bulk basis).
For the period May 5-Dec. 31, 1970 the high was 4.25¢; Low 3.57¢; Average 3.87¢.

Source: Lamborn Sugar Market Report

Part IV

WORLD PRODUCTION

Sugar, a basic food, is produced by more than 110 nations throughout the world. There are two basic types—cane and beet sugar. In 1970-71, cane sugar production totaled 45.8 million tons; beet sugar totaled 32.6 million tons.

World production in 1970-71 reached near record levels—78.4 million short tons (raw value). (In addition, another 9.6 million tons of non-centrifugal sugar was produced.)

WORLD PRICE

In one way or another, the people of the world dispose of about 72.3 million tons of sugar each year. Most of it—70 percent—is consumed in the areas where it is grown. Another 20 percent is reserved for markets where the growers have government assistance or some form of preferential treatment.

The remaining 10 percent of world production—the fraction that has no “home”—constitutes the so-called “world market” or “free market.”

Prices in the world market are normally depressed, frequently below the cost of production in even the most efficient producing areas.

Critics of the sugar industry periodically contrast the distressed levels of the world market with prices in the United States and proclaim the difference to be the cost of the sugar program. This might be plausible if the world price represented an honest measure of values, but it does not.

The world price bears not the faintest relationship to costs of production, or to decent living standards. It is simply a dumping price and is so recognized universally.

It might be added that since all countries except Norway impose import levies on sugar, the world price is in truth an economic mirage.

The world market is at best a thin one, and,

although it usually jogs along at fire-sale prices, any reduction in total world supplies can make it extremely volatile. In 1963, for example, when shortages in production occurred both in Continental Europe and Cuba, prices skyrocketed and a mad scramble of speculation resulted. The United States, through the operation of the quota system, was able to weather the crisis.

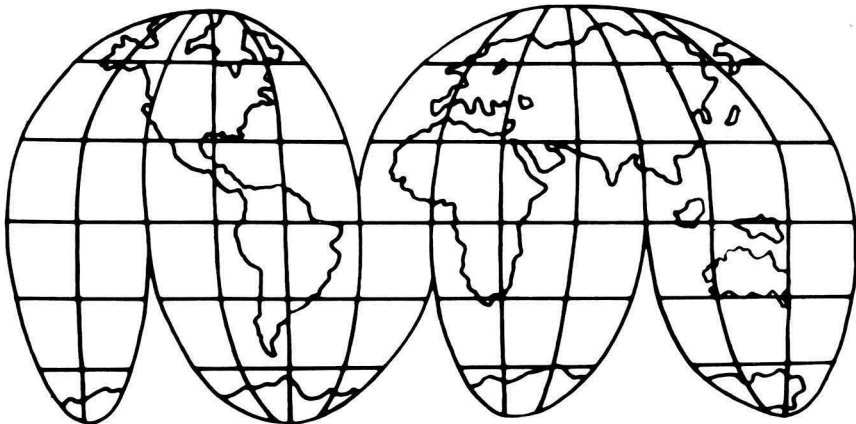
INTERNATIONAL SUGAR AGREEMENT

An International Sugar Agreement, negotiated during a conference held in Geneva in 1968 under the auspices of the United Nations Conference on Trade and Development (UNCTAD), entered into force on January 1, 1969.

The new Agreement replaced the 1958 International Sugar Agreement which had been concluded for a period of five years, but whose economic provisions became inoperative from the beginning of 1962 and whose administrative provisions were maintained in force, under a series of extension protocols, until December 31, 1968.

As in the previous Agreement, the major objective of the new Agreement is the stability of the “free market.” (The “free market” is defined as the net imports of the world market, except those covered under special arrangements, i.e. exports to the United Kingdom under the Commonwealth Sugar Agreement, 1951; exports by Cuba and the U.S.S.R. to socialist bloc countries; exports under the African and Malagasy Sugar Agreement and exports to the United States of America. As thus defined, the “free market” represented, in 1969, a total outlet of about 8.5 million tons.) To this end, the Agreement provides for the regulation of exports by means of quotas related to the basic export tonnages

Cont. on Page 39



CENTRIFUGAL SUGAR: Production in Specified Countries,

(IN 000'S SHORT TONS)

Region and Country	Average 1961-62/ 1965-66	1966-67	1967-68	1968-69	1969-70	1970-71 ²
<u>NORTH AMERICA:</u>						
Antigua	21	5	1	0	5	10
Bahamas	0	0	0	15	25	0
Barbados	197	225	178	156	174	168
British Honduras	37	65	71	58	75	69
Canada	153	163	149	149	148	116
Costa Rica	104	135	140	144	166	185
Cuba	5,094	6,200	5,500	5,200	9,400	6,500
Dominican Republic	808	896	735	975	1,118	1,200
El Salvador	92	138	149	120	129	162
Guadeloupe	193	160	155	164	176	193
Guatemala	153	200	167	191	196	228
Haiti	67	60	56	60	66	75
Honduras	33	50	60	61	58	67
Jamaica and Dep.	537	502	498	429	414	448
Martinique	81	52	41	35	30	37
Mexico	2,043	2,679	2,520	2,765	2,587	2,746
Nicaragua	98	114	117	138	155	175
Panama	45	65	75	82	81	83
St. Kitts	46	44	39	39	30	34
Trinidad-Tobago	250	222	268	266	242	255
U.S.-Continental (beet)	2,848	2,860	2,694	3,510	3,325	3,350
U.S.-Continental (cane)	1,029	1,215	1,457	1,214	1,071	1,252
U.S.-Hawaii	1,170	1,191	1,232	1,180	1,162	1,200
U.S.-Puerto Rico	954	818	645	483	460	400
U.S.-Virgin Islands	10	0	0	0	0	0
TOTAL	16,061	18,059	16,947	17,434	21,293	18,953
<u>SOUTH AMERICA:</u>						
Argentina	1,053	1,118	844	1,006	1,059	1,061
Bolivia	80	95	112	125	125	120
Brazil	4,121	4,807	4,922	4,804	5,063	5,987
Chile	108	131	178	207	210	247
Colombia	440	635	701	740	774	762
Ecuador	182	185	205	240	230	250
Guyana	336	385	355	408	348	437
Paraguay	42	43	43	46	53	88
Peru	880	823	848	716	816	882
Surinam	14	20	19	19	20	20
Uruguay	63	69	37	71	49	73
Venezuela	353	478	383	407	467	514
TOTAL	7,674	8,789	8,647	8,789	9,214	10,441
<u>WESTERN EUROPE:</u>						
Austria	299	393	331	322	350	386
Belgium-Luxembourg	477	459	633	646	757	634
Denmark	346	352	363	375	335	321
Finland	53	62	70	55	60	60
France	2,225	1,967	1,905	2,623	2,974	2,971
Germany West	1,894	2,109	2,271	2,177	2,280	2,270
Greece	55	126	133	105	161	206
Ireland	150	123	166	178	162	165
Italy	1,136	1,513	1,848	1,422	1,526	1,323
Netherlands	595	633	828	793	845	773
Portugal	18	23	23	25	25	25
Spain	565	679	692	815	876	863
Sweden	277	252	283	321	228	241
Switzerland	46	65	83	73	72	69
UK-No. Ireland	978	1,030	1,075	1,075	1,033	1,090
TOTAL	9,114	9,786	10,704	11,005	11,684	11,397

Average 1961/62-1965/66, Annual 1966/67 Through 1970/71¹

Region and Country	Average 1961-62/ 1965-66	1966-67	1967-68	1968-69	1969-70	1970-71 ²
EASTERN EUROPE:						
Albania	13	18	17	17	18	19
Bulgaria	213	375	338	200	225	250
Czechoslovakia	1,142	1,021	1,000	1,005	800	850
Germany East	847	625	610	600	575	600
Hungary	486	528	495	480	500	300
Poland-Danzig	1,688	1,856	2,109	1,880	1,683	1,659
Romania	407	536	500	450	500	420
Yugoslavia	340	635	540	433	545	424
TOTAL	5,136	5,594	5,609	5,065	4,846	4,522
TOTAL EUROPE:	14,249	15,380	16,313	16,070	16,530	15,919
U.S.S.R.	8,443	10,304	11,503	11,111	9,755	10,000
AFRICA:						
Congo-Kinshasa	38	39	40	43	45	50
Ethiopia	73	82	74	73	80	80
Kenya	41	56	71	114	138	143
Malagasy Republic	115	117	118	115	120	115
Mauritius and Dep.	660	704	658	737	635	745
Mozambique	190	220	236	276	300	310
Rep. South Africa ⁴	248	240	260	295	275	275
Reunion	147	290	150	132	150	150
Rhodesia	1,206	1,794	2,009	1,659	1,788	1,542
Swaziland	85	163	165	170	173	180
Tanzania	60	90	90	95	100	110
UAR-Egypt	424	385	455	425	450	450
Uganda	135	157	165	173	160	165
Other ⁵	214	487	464	563	598	647
TOTAL	3,637	4,824	4,955	4,870	5,012	4,962
ASIA:						
Burma	73	86	90	90	100	125
China-Mainland	1,236	1,800	2,000	2,200	2,200	2,300
China, Rep. of (Taiwan)	1,004	884	975	834	668	819
India ⁶	3,788	3,039	3,092	4,640	5,520	5,033
Indonesia	686	661	716	750	700	800
Iran	206	394	504	568	642	660
Japan	277	380	427	457	462	503
Nansei-Nanpo (Ryukyu)	156	215	243	265	275	275
Pakistan	300	510	389	558	875	847
Philippines	1,709	1,718	1,759	1,760	2,124	2,334
Thailand	241	271	264	370	492	596
Turkey (Europe-Asia)	610	773	872	778	600	709
Other ⁷	152	132	119	115	128	126
TOTAL	10,438	10,863	11,450	13,385	14,786	15,127
OCEANIA:						
Australia	1,943	2,564	2,556	2,894	2,314	2,614
Fiji	301	392	441	448	347	400
TOTAL	2,244	2,956	2,997	3,342	2,661	3,014
TOTAL WORLD	62,746	71,175	72,812	75,001	79,251	78,416

¹Years shown are crop year of the crop-harvesting season. For chronological arrangement here, all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May/April year in which harvesting and sugar production began. ²Preliminary. ³Prior to 1962/63 crop year included Swaziland. ⁴Other Africa includes Afars-Issas, Algeria, Angola, Cameroon, Congo (Brazzaville), Ghana, Liberia, Malawi, Morocco, Nigeria, Somali Republic, Sudan, Tunisia and Zambia. ⁵Includes Khandasari. ⁶Other Asia includes Afghanistan, Ceylon, Iraq, Israel, Lebanon, Nepal, South Korea, South Vietnam and Syria.

Source: Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source material, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of office research, and related information.

SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1970

(METRIC TONS—RAW VALUE)

(To convert to short tons multiply by 1.1023. Footnotes — see page 39)

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
NORTH AMERICA:				
Canada	112,131	999,229	1,073,870	15,294
U.S.A.	5,734,393	4,804,137	10,547,078	1,144
U.S.A. (Mainland)	(4,273,180)	(4,804,137)	(10,401,236)	(1,144)
Hawaii	(1,054,213)	(0)	(32,842)	(0)
Puerto Rico & Virgin Isl.	(407,000)	(0)	(113,000)	(0)
TOTAL	5,846,524	5,803,366	11,620,948	16,438
EUROPE:				
Albania	17,000 ¹	19,800 ¹	37,000 ¹	0
Austria	330,979	0	325,200	0
Bulgaria	230,000 ¹	403,279 ⁴	450,000 ¹	100,000 ¹
Cyprus	0	18,202	18,172	30
Czechoslovakia	735,000	233,522	630,000	350,222
Denmark ⁷	290,941	3,657	264,333	43,840
E.E.C.	7,705,352	120,576	7,304,905	926,959
Finland	59,700	175,675	223,776	58,212
French Overseas Terr. ¹⁰	0	20,900	22,500 ¹	0
Germany (East)	500,000 ¹	513,622 ⁴	690,000 ¹	170,081 ⁵
Gibraltar	0	1,277 ⁴	1,270 ¹	0
Greece	187,880	17,600	184,510	7,710
Hungary	303,831	37,047	421,291	22,651
Iceland	0	10,305	11,200 ¹	0
Ireland	165,157	28,973	184,375	18,175
Malta	0	20,000 ⁶	20,000 ¹	0
Norway	0	175,231	174,705	0
Poland	1,542,068	11,893	1,418,108	323,420
Portugal: Mainland ³	0	215,031 ⁴	213,429	0
Azores & Madeira ³	10,362	6,695	16,759	0
Roumania	409,499	99,178 ⁴	440,000 ¹	48,447 ⁵
Spain: Penin. & Bal.	887,432	81,491	920,000 ¹	0
Canary Isl.	0	38,181	42,000 ¹	6
Sweden	219,522	116,457	369,657	8,216
Switzerland	58,184	238,027	318,130	8,627
Turkey	643,087	0	662,005	43,417
United Kingdom	925,144	2,187,056	2,938,457	209,940
U.S.S.R.	8,804,000 ¹	3,004,688	10,591,000 ¹	1,522,391
Yugoslavia	384,902	10,994	590,000 ¹	61,360
TOTAL	24,410,040	7,809,357	29,482,782	3,923,704
SOUTH AMERICA:				
Argentina	976,025	0	960,212	120,816
Bolivia	124,000 ¹	0	114,000 ¹	7,091 ⁶
Brazil	5,019,219	0	3,495,185	1,129,848
Chile	230,000 ¹	100,000 ⁶	345,000 ¹	0
Colombia	676,174	0	545,692	129,705
Ecuador	296,000 ¹	0	138,000 ¹	81,355 ⁵
Guyana	332,826	83	26,031	308,147
Paraguay	52,355	0	49,000	118
Peru	770,764	0	380,860	403,165
Surinam	13,056	1,938	11,372	2,765
Uruguay	55,000 ¹	73,105 ⁴	115,000 ¹	0
Venezuela	456,632	0	415,669	36,600
TOTAL	9,002,051	175,126	6,596,021	2,219,610

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
CENTRAL AMERICA:				
Bahamas	18,768	6,007	5,000 ¹	8,882 ⁵
Barbados	160,420	1,202	12,993	148,108
Bermuda	0	2,360	2,900 ¹	0
British Honduras	69,753	1,846	5,975	61,366
Costa Rica	150,000 ¹	0	80,000 ¹	68,875 ⁵
Cuba	7,558,569	0	619,376	6,906,286
Dominican Republic	1,014,075	0	124,300	792,811
El Salvador	117,054	0	67,782	48,154
Guatemala	185,000 ¹	0	123,000 ¹	62,725
Haiti	66,000 ¹	0	45,000 ¹	19,627
Honduras	53,000 ¹	0	47,000 ¹	9,774
Jamaica	382,294	12,972	83,575	302,650
Leeward and Windward Isl.	32,500	3,000	16,800	29,984
Mexico	2,402,015	0	1,992,482	611,857
Netherlands Antilles	0	6,851	6,851	0
Nicaragua	140,000 ¹	0	63,000 ¹	69,205 ⁵
Panama	77,336	0	38,300 ¹	33,344 ⁵
Panama Canal Zone	0	2,500 ¹	2,500 ¹	0
Trinidad & Tobago	221,543	368	49,400	171,061
Virgin Isl. (U.K.)	0	487 ¹	487 ¹	0
TOTAL	12,648,327	37,593	3,386,721	9,344,209
ASIA:				
Afghanistan ⁹	28,000 ¹	53,862 ⁴	80,000 ¹	0
Brunei	0 ¹	4,200 ¹	4,350 ¹	0
Burma	90,000 ¹	0	95,000 ¹	0
Cambodia	0	3,500	8,822 ²	0
Ceylon	15,684	265,166	311,029	0
China (Mainland)	290,000 ¹	530,430 ⁴	3,150,000 ¹	79,634 ⁵
China (Taiwan)	684,810	0	236,475	425,994
Hong Kong	0	104,931	79,985	27,698
India	4,634,226	0	3,766,641	339,004
Indonesia ⁴	700,000 ¹	120,000 ⁶	770,000 ¹	0
Iran	560,000 ¹	77,672 ⁴	680,000 ¹	0
Iraq	15,000 ¹	241,244	315,000 ¹	0
Israel	29,329	149,367	175,946	0
Japan	646,032	2,480,364	3,028,594	807
Jordan	0	59,362	90,000 ¹	0
Korea (North)	0	182,474	180,000 ¹	10,000 ⁶
Korea (South)	0	218,456	212,247	10,280
Kuwait	0	28,504	26,000	7,473
Laos	0	9,000 ⁶	9,000 ¹	0
Lebanon	10,000 ¹	47,954 ¹	56,000 ¹	3,000 ¹
Macao	0	3,662	3,538	0
Malaysia:				
West Malaysia	0	346,151	360,000 ¹	11,319
Sabah	0	18,428	19,500 ¹	621
Sarawak	0	24,783	26,000	0
Maldiv Islands	0	5,000 ⁶	5,000 ¹	0
Mongolia	0	17,986 ¹	23,000 ¹	0
Nepal	10,000 ²	13,000 ¹	23,500 ¹	0
Pakistan	770,000 ¹	342 ⁴	625,000 ¹	70,000 ¹
Persian Gulf	0	44,244 ⁴	40,000 ¹	0
Philippines	1,980,004	0	612,715	1,178,248
Saudi Arabia	0	85,961 ⁴	75,000 ¹	0
Singapore	0	123,892	106,415 ²	29,630
Southern Yemen, Rep. of	0	45,000 ¹	45,000 ¹	3,000 ¹
Syria	30,000	105,669 ⁴	130,000 ¹	0
Thailand ¹⁰	494,815	0	371,901	52,294
Timor ³	0	750	950	0
Vietnam (North)	0	57,590 ⁴	57,000 ¹	1,900 ⁵
Vietnam (South)	0	310,000 ⁶	300,000	0
Yemen	0	49,079 ¹	58,000 ¹	0
TOTAL	13,600,900	5,828,023	16,157,608	2,250,902

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	<u>Countries</u>	<u>Production</u>	<u>Imports</u>	<u>Consumption</u>	<u>Exports</u>
AFRICA:					
Algeria	10,000 ¹	245,000 ⁸	272,000 ¹	0
Angola ³	78,765	7	60,186	11,357
Botswana	0	11,000 ¹	11,000 ¹	0
Burundi	0	3,000 ¹	3,000 ¹	0
Cameroon	9,329	10,000 ⁰	16,000 ¹	0
Cape Verde Islands ³	0	4,288	4,733	0
Central African Republic	0	5,462	4,900 ¹	0
Chad	0	23,270	22,000 ¹	0
Congo (Brazzaville)	100,000 ¹	0	9,000 ¹	93,000 ⁰
Congo (Kinshasa)	40,000 ¹	6,000 ⁸	50,000 ¹	0
Dahomey	0	12,000 ⁸	12,500 ¹	0
Equatorial Guinea	0	875 ¹	875 ¹	0
Ethiopia	85,000 ¹	30 ⁴	82,000 ¹	0
Gabon	0	2,000 ¹	2,000 ¹	0
Gambia	0	6,500 ⁸	7,500 ¹	0
Ghana	15,000 ¹	115,000 ⁸	105,000 ¹	1,229 ⁵
Guinea	0	13,500 ¹	13,500 ¹	0
Ivory Coast	0	54,785	51,579 ²	0
Kenya	141,323	37,095	172,937	0
Liberia	0	5,927 ⁴	6,000 ¹	0
Libya	0	59,940	60,000 ¹	0
Malagasy Republic	108,000 ¹	139	56,761	53,677
Malawi	32,763 ³	1,652	31,938	3
Mali	5,000 ¹	28,625	30,000 ¹	0
Mauritania	0	26,000 ⁰	26,000 ¹	0
Mauritius	610,776	25	33,796	616,296
Morocco	155,000 ¹	250,000 ⁰	410,000 ¹	0
Mozambique ³	286,586	0	88,714	180,214
Niger	0	10,179	9,780	0
Nigeria	12,000 ¹	63,668 ⁴	85,000 ¹	0
Portuguese Guinea ³	0	2,253	2,013	0
Rhodesia	135,000 ¹	0	90,000 ¹	50,000 ¹
Rwanda	0	4,920 ⁸	5,100 ¹	0
St. Helena	0	186 ⁴	230	0
St. Thome and Principe ³	0	1,090	1,045	0
Senegal	0	74,125	68,500 ¹	0
Seychelles	0	1,961	2,000 ¹	0
Sierra Leone	0	31,448 ⁴	30,000 ¹	0
Somalia	49,949	41	53,509	0
South Africa	1,648,698	1,531	916,180	690,802
Spanish Sahara	0	300 ¹	300 ¹	0
Spanish Poss. in N. Africa	0	6,474	7,000 ¹	0
Sudan	100,000 ¹	125,001 ⁴	230,000 ¹	0
Swaziland	180,417	0	13,538	164,721
Tanzania ³	88,000 ¹	5,529 ⁴	100,000 ¹	100 ¹
Togo	0	11,500 ⁸	11,500 ¹	27 ⁵
Tunisia	5,700 ¹	121,767 ⁴	100,000 ¹	10,000 ¹
Uganda ³	154,065	0	143,478	25,296
U.A.R. (Egypt)	495,000 ¹	45,316 ⁴	519,000 ¹	20,000 ⁰
Upper Volta	0	14,100 ⁸	14,100 ¹	0
Zambia	40,098	19,683	53,778	0
TOTAL	4,586,469	21,292,452	4,099,970	1,916,722
OCEANIA:					
Australia	2,506,853	0	720,914	1,662,788 ⁸
British Oceania	0	4,723 ⁸	4,699 ⁸	0
Fiji	349,541	279	25,765	348,724
New Zealand	0	161,693	157,599	141
U.S. Oceania	0	5,350 ¹	5,350 ¹	0
Western Samoa	0	3,700 ¹	3,700 ¹	0
TOTAL	2,856,394	175,745	918,007	2,011,653
WORLD TOTAL	72,950,705	21,292,452	72,262,057	21,683,238

laid down in the Agreement; for adjustments of quotas in effect at various price levels between the equivalents of 3.25 and 5.25 cents per lb. f.o.b. and stowed, Caribbean port, in bulk (on this basis of quotations for contract No. 8 in New York and of the London Sugar Market daily price) or upon re-distribution of surrendered quotas or parts of quotas; for the maintenance of minimum stocks to meet the requirements of importing Members, for limitations on maximum stocks in exporting countries; and for limitations on imports from

non-participating countries. The operative provisions of the Agreement are designed to ensure that appropriate supplies are available to the free market throughout the quota year.

As an additional step towards the stabilization of the free market, the Agreement contains, in an annex, undertakings by developed importing countries in respect of access to their markets. Added protection of importing Members is also secured in the form of supply commitments by exporting Members to importing Members in respect of quantities and price in

Cont. on Page 43

NONCENTRIFUGAL SUGAR:¹ Production in Specified Countries, Average 1961/62-1965/66, Annual 1966/67 Through 1970/71²

Region and Country	(000'S SHORT TONS)					
	Average 1961-62/ 1965-66	1966-67	1967-68	1968-69	1969-70	1970-71 ³
NORTH AMERICA:						
Costa Rica	36	44	44	45	45	46
El Salvador	24	31	29	25	30	14
Guatemala	35	46	53	53	50	50
Mexico	132	130	127	127	127	127
Nicaragua	22	18	20	11	13	14
Panama	5	4	4	3	3	2
TOTAL	253	273	277	264	268	253
SOUTH AMERICA:						
Colombia	686	749	739	728	739	750
Ecuador	39	39	44	44	44	45
Peru	21	14	14	13	14	14
Venezuela	48	39	42	42	42	40
TOTAL	794	841	839	827	839	849
ASIA:						
Burma	164	160	160	160	160	160
China-Mainland	489	700	800	800	800	800
Taiwan	27	24	21	30	26	27
India	5,304	5,511	4,960	6,063	6,614	7,165
Indonesia	333	330	330	330	340	340
Japan	18	8	8	6	6	3
Nansei-Nanpo (Ryukyu)	11	15	15	15	15	15
Pakistan	679	616	765	750	784	795
Philippines	55	62	63	65	60	61
Thailand	155	182	198	215	231	248
Vietnam South	39	40	18	9	10	10
TOTAL	7,273	7,648	7,338	8,443	9,046	9,624
TOTAL WORLD	8,320	8,762	8,454	9,534	10,153	10,726

¹Noncentrifugal sugar includes all types of sugar produced by other than centrifugal process which is largely for consumption in the relatively few areas where produced. The estimates include such kinds known as piloncillo, panela, papelon, chancaca, radura, jaggery, gur, muscovado, panocha, etc. ²Years shown are last year's crop-harvesting season. For chronological arrangements here all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May-April year in which harvesting and sugar production began. ³Preliminary. Source: Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source materials, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of office research and related information.

← FOOTNOTES: SUGAR SUPPLY & DISTRIBUTION BY COUNTRIES, 1970 Pages 37, 38, 39

¹Estimated. ²Calculated. ³Tel Quel. ⁴As reported by countries of origin. ⁵As reported by countries of destination. ⁶Partly estimated. ⁷Includes Greenland. ⁸Including sugar for non-human consumption to a reported equivalent of 20,881 m.t. ⁹Year ending 20th March, 1971. ¹⁰Comores. Fr. Terr. of Afars Issas, French Oceania, New Caledonia, New Hebrides and St. Pierre Miquelon.

Source: International Sugar Council.

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES
on 1st January 1968, and Representative Prices for Years 1969 and 1970.

(In U.S. Cents per Pound)

Countries	Locality (1970 prices)	Retail Prices 1/1/68	Representative Prices			
			1969	1969	1970	1970
			Wholesale	Retail	Wholesale	Retail
<u>NORTH AMERICA</u>						
Canada	Montreal	8.9	7.7	10.2	8.6	11.0
U.S.A.	whole country	12.2	10.6	12.4	11.3	13.0
<u>CENTRAL AMERICA</u>						
British Honduras	Belize	6.0	5.2	6.0	5.2	6.0
Costa Rica	whole country	.....	8.7	10.0	.....	.....
Cuba	whole country	.....	.....	6.9	.....	6.9
Dominican Rep.	whole country	9.5	7.9	8.6	.....	.....
El Salvador	whole country	10.0	8.9	9.9	9.0	10.0
Guatemala	whole country	7.9	.....	.....	.....	.....
Honduras	.....	.....	.....	9.9*	.....	.....
Jamaica	whole country	.....	12.5	13.0	12.0	13.0*
Mexico	whole country	.....	.....	5.6*	7.8*	8.4*
Nicaragua	.....	8.6	.....	.....	.....	.....
Panama	.....	.....	10.1	11.0	.....	.....
Trinidad & Tobago	whole country	7.3	7.5	7.8	7.0	7.8
<u>West Indies:</u>						
Bahamas	Nassau	.....	7.8	9.8	.....	.....
Barbados	whole country	11.7	7.5	9.0	8.0	9.5
Turks & Caicos	whole country	.....	8.0	12.0	.....	.....
Bermuda	Hamilton	.....	3.3	11.0	.....	.....
<u>Leeward Islands:</u>						
Antigua	whole country	7.5	.....	.....	.....	.....
Montserrat	whole country	.....	10.0	11.5	9.0	11.2
St. Kitts-Nevis	whole country	9.0	9.0	17.0	10.0	12.3
<u>Windward Islands:</u>						
Dominica	Roseau	8.0	.....	.....	.....	.....
Grenada	St. George's	8.0	.....	.....	.....	.....
St. Lucia	Castries	.....	.....	.....	.....	.....
St. Vincent	Kingstown	8.0	.....	7.5*	.....	.....
Virgin Is. (Br.)	whole country	.....	8.8	17.0	.....	.....
<u>SOUTH AMERICA</u>						
Bolivia	whole country	.....	.....	7.6	.....	.....
Brazil	Rio de Janeiro	6.4	.....	.....	.....	.....
Chile	Santiago	11.1	8.8	11.2	.....	.....
Colombia	.....	6.1	.....	5.4*	4.3	5.0
Guyana	whole country	.....	4.4	4.8*	10.0	12.0
Paraguay	whole country	.....	.....	7.9*	.....	.....
Peru	whole country	6.7	.....	6.0	6.0	13.0
Surinam	whole country	.....	.....	.....	24.0	26.7
Uruguay	.....	.....	9.8	.....	.....	.....
Venezuela	whole country	10.1	8.8	10.1	8.0	10.0
<u>EUROPE</u>						
Austria	whole country	11.9	10.7	12.2	10.8	12.4
Belgium	whole country	13.7	.....	14.2*	.....	17.2*
Cyprus	whole country	6.0	.....	7.0	8.1	9.6
Denmark	whole country	.....	.....	14.1*	13.7	15.2
Finland	whole country	13.1	12.6	14.3	12.7	14.5
France	whole country	11.3	.....	11.3*	.....	12.5*
Germany (West)	whole country	13.3	.....	13.3*	.....	14.7*
Gibraltar	whole country	.....	6.8	7.5	.....	.....
Greece	Athens-Piraeus	19.5	18.4	20.0	18.5	19.5

Cont. on Next Page

*Price on 1st January 1970.

Source: International Sugar Council

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES
on 1st January 1968, and Representative Prices for Years 1969 and 1970. (cont.)

Countries	Locality (1970 prices)	Retail Prices 1/1/68	Representative Prices			
			1969		1970	
			Wholesale	Retail	Wholesale	Retail
Hungary	whole country	.....	.....	.....	13.6	15.0
Iceland	Reykjavik	.....	6.9	9.5	.....	.....
Ireland	average	.....	.....	10.5*	.....	.....
Italy	whole country	16.7	.....	16.7*	.....	17.7*
Malta	whole country	.....	.....	5.3	.....	.....
Netherlands	whole country	15.5	.....	16.7*	.....	14.7*
Norway	Oslo	6.3	6.7	8.2	.....	.....
Portugal	whole country	11.4	.....	11.5*	12.0	12.8*
Azores	whole country	.....	.....	13.9*	.....	14.4*
Madeira	whole country	.....	.....	13.1*	.....	.....
Spain	whole country	.....	.....	10.0*	.....	.....
Sweden	whole country	13.0	9.5	13.5	9.3	13.7
Switzerland	whole country	9.3	7.2	9.3	7.9	9.9
Turkey	Ankara	13.9	15.1	16.4	24.0	26.3
United Kingdom	whole country	8.5	8.3	9.0	8.5	9.0
Yugoslavia	whole country	.....	9.0	9.7	9.4	10.1
ASIA						
Burma	Rangoon	.....	.....	12.4*	.....	.....
Cambodia	Phnom-Penh	.....	14.7	17.2	13.0	15.5
Ceylon	whole country	12.1	11.5	12.1	11.6	12.1
China (Taiwan)	Taipei area	11.5	11.7	13.0	12.5	13.6
Hong Kong	whole country	.....	4.7	8.0	6.1	8.9
India	Kanpur	10.1	10.0	10.1	9.9*	10.0*
Indonesia	average	.....	.....	6.7*	.....	.....
Iran	whole country	13.8	13.7	14.3	.....	.....
Iraq	whole country	8.3	9.9	10.5	.....	.....
Israel	all cities	.....	.....	.....	.....	.....
Japan	Tokyo	16.1	.....	16.4*	14.4	17.7
Jordan	.....	5.1	.....	5.1*	7.0	7.7
Korea (South)	whole country	17.8	15.0	15.7	16.1	17.0
Kuwait	whole country	6.4	5.1	6.4	.....	.....
Laos	Vientiane	.....	.....	11.2*	.....	.....
Lebanon	whole country	10.3	9.4	10.5	.....	.....
Macao	whole country	.....	.....	7.2*	.....	.....
Nepal	main centres	.....	.....	13.4*	.....	.....
Pakistan	West	17.9	17.6	17.9	.....	.....
Philippines	whole country	7.3	.....	9.6*	5.7	6.5
Sabah	Kota Kinabalu	6.9	.....	7.8	.....	.....
Sarawak	Kuching	6.1	6.6	7.2	7.1	8.1
Singapore	whole country	7.8	6.9	7.8	8.1	8.5
Southern Yemen Rep.	Aden	.....	5.2	6.0	.....	.....
Syria	whole country	.....	10.6	10.9	.....	.....
Thailand	Bangkok	8.2	7.7	8.5	6.3	7.4
Timor	whole country	.....	.....	12.8*	.....	.....
Vietnam (South)	Saigon	.....	20.1	21.5	.....	.....
West Malaysia	whole country	.....	8.5	12.0	.....	4.1
AFRICA						
Algeria	.....	14.7	14.5	15.2	.....	.....
Angola	whole country	.....	.....	7.7*	.....	.....
Botswana	.....	11.2	.....	.....	.....	.....
Burundi	whole country	.....	8.0	10.2	.....	.....
Cameroon	Yaounde	.....	14.2	15.2	.....	.....
Cape Verde Islands	whole country	.....	.....	12.0*	.....	.....
Central African Rep.	.....	.....	.....	.....	18.3	19.7

*Price on 1st January 1970.

Cont. on Next Page

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES
on 1st January 1967 and 1968, and Representative Prices for Year 1969. (cont.)

Countries	Locality (1970 prices)	Retail Prices 1/1/68	Representative Prices			
			1969		1970	
			Wholesale	Retail	Wholesale	Retail
Chad	Fort Lamy	.....	18.7	20.4	.....	.....
Congo (Kinshasa)	whole country	.....	9.5	12.3	.....	.....
Dahomey	Cotonu	.....	8.4	9.0	.....	.....
Ethiopia	Addis Ababa	.....	11.4	12.2	.....	.....
Gabon	Libreville	.....	13.3	15.0	.....	.....
Gambia	Bathurst	.....	6.0	7.0	.....	.....
Ghana	Accra	9.8	.....	.....	.....	.....
Ivory Coast	Abidjan	12.2	7.1	7.5	.....	.....
Kenya	whole country	.....	.....	9.8*	9.0	9.8
Liberia	Monrovia	25.0	.....	.....	.....	.....
Libya	whole country	6.1	5.6	6.4	5.7	6.3
Malawi	Blantyre	11.0	.....	11.0*	.....	.....
Malagasy Rep.	Tananrive	.....	20.4	22.8	20.4	22.8
Mali	Bamako	10.8	.....	11.5	.....	.....
Mauritania	Nouakchott	13.8	12.6	13.7	.....	.....
Mauritius	whole country	.....	3.4	3.8	3.0	4.0
Morocco	average	16.5	.....	.....	.....	.....
Mozambique	whole country	.....	.....	8.9*	.....	.....
Niger	Niamey	14.0	.....	.....	.....	.....
Nigeria	whole country	14.0	.....	.....	.....	.....
Port. Guinea	whole country	.....	.....	10.4*	.....	.....
Rhodesia	whole country	.....	.....	.....	.....	.....
Rwanda	.....	6.1	.....	.....	.....	.....
St. Helena	whole country	8.0	8.2	10.0	8.0	10.0
S. Thome & Principe	whole country	.....	.....	9.7*	.....	.....
Senegal	Dakar	10.2	.....	.....	.....	.....
Seychelles	Victoria	.....	.....	6.5*	7.8	8.1
Sierra Leone	Freetown	.....	.....	9.6*	.....	.....
Somalia	Mogadiscio	15.2	14.1	15.2	.....	.....
South Africa	Durban	.....	8.7	9.8	8.7	9.8
Sudan	whole country	.....	.....	20.3*	.....	.....
Swaziland	whole country	4.5	.....	.....	10.3	13.0
Tanzania	Dar-es-Salaam	10.5	9.7	10.5	.....	.....
Togo	Lome	.....	.....	8.7*	.....	.....
Tunisia	whole country	.....	9.3	9.6	.....	.....
U.A.R. (Egypt)	whole country	12.0	11.8	11.8	.....	.....
Uganda	average	9.1	.....	.....	.....	.....
Upper Volta	Ouagadougou	.....	12.2	13.0	.....	.....
Zambia	railheads	11.1	4.5	5.0	.....	.....
OCEANIA						
Australia	capital cities	11.7	10.1	11.7	10.0	11.7
Br. Solomon Islands	Honiara	11.2	.....	11.2	10.0	13.4
Fiji	main centers	.....	.....	11.4*	5.2	5.8
Hawaii	Honolulu	.....	.....	13.5*	.....	.....
Gilbert & Ellice Isles	Tarawa	.....	.....	10.0*	.....	.....
New Hebrides	Vila	11.0	.....	11.2*	.....	.....
New Zealand	4 main centers	6.3	7.2	7.9	8.2	8.9
Tonga	Nuku'alofa	9.0	7.8	10.1	.....	.....
Western Samoa	Apia	11.1	8.9	11.2	.....	.....

*Price on 1st January 1970.

times of shortage or high prices.

The Agreement also contains special provisions in favor of developing countries. Thus, developing exporting Members with small basic export tonnages share each other's shortfalls, in addition to participating in such redistribution of shortfalls by other Members as may take place; a larger share is reserved for all developing exporting Members in shortfall re-distributions and, for special cases of hardship, a special hardship reserve of up to 150,000 tons a year is available to them.

For developing importing Members, provision is made whereby they may, occasionally, become net exporters up to a maximum of 10,000 tons in any year.

The Agreement also provides for measures designed to assist in securing an appropriate expansion in sugar consumption for human, industrial and other uses.

Thirty-four exporting and fifteen importing countries are parties to the Agreement; two further countries—one exporting and one importing—are in the process of acceding to it. The United States, which is not a party to the new Agreement, accepted an invitation to observe at sessions of the International Sugar Council in 1969, 1970 and 1971.

(Source: International Sugar Organization)

NEW YORK COFFEE AND SUGAR EXCHANGE, INC.

The world's largest market for trading in raw sugar is New York. Here are located the principal buyers and sellers, or their agents, of raw sugar for the U.S. domestic market. In addition, a very large proportion of the sugars sold to world market buyers of sugar is also channeled through New York.

Of extreme importance in this market is the New York Coffee & Sugar Exchange, Inc., whereon sugars for both the U.S. and world markets are bought and sold for future delivery. The Exchange is located at 79 Pine Street, New York, N.Y. The Sugar Exchange, like all organized commodity markets, provides the opportunity for various vital economic functions to be performed.

The Exchange provides a market in which the sugar producer may hedge (sell) all or part of his anticipated production and thus guarantee his price. Amongst other advantages, this facilitates financing. Conversely, the sugar buyer can determine a price far in advance by buying on the Exchange. This enables the buyer to anticipate his requirements and establish his cost.

Each day during trading hours, there is a ready market for buying and selling. This is not the case in actuals.

The Exchange is a public market with all quotations and trades a matter of open record. This permits all who are interested in sugar to know its value from day to day and, if necessary, minute to minute. Through the Exchange function, there is recorded the meeting of minds of buyers and sellers as to values as represented by trades or bid and asked prices.

The Exchange serves as a guidepost for the future by providing a means of trading for delivery in position as much as a year and a half ahead. The quotations, representing, as they do, the thinking of the keenest students of the sugar market, foreshadow coming events.

The Exchange disseminates information pertaining to sugar received from all corners of the earth.

To the Exchange trading floor come buying and selling orders which may emanate from all parts of the sugar world—from producers, refiners, merchants, sugar consumers. The public is also represented through the speculative activity which is a necessity for the creation of a broad, stable, realistic commodity market.

In the "ring," which is the designation of the area within which trades may be made, specialists known as "floor brokers" execute the buying and selling orders of their clients. All trading is done by open outcry and there are adequate safeguards to assure equitable treatment for all traders, be they large or small.

At the conclusion of each day's trading, all purchases and sales are submitted by the broker members of the New York Coffee & Sugar Clearing Association to that Association. The Clearing Association intervenes as a principal in each transaction. It becomes the buyer on each sale made and the seller on each purchase made—thus protecting the integrity of all contracts made on the Exchange.

The brokers deposit margins with the Clearing Association as a guarantee that the contracts will be fulfilled. These margins are, moreover, maintained adequately each day as the market fluctuates.

An additional protection is afforded through the Guarantee Fund of the Clearing House which is created by a deposit made by each firm at the time it joins the Clearing Association. The Guarantee Fund is available to make good any default by a member firm.

NEW YORK SPOT SUGAR PRICES

DOMESTIC NO. 10 SPOT

This is the quotation at 2 P.M. for raw centrifugal cane sugar, reasonably due within 45 days, basis 96°, in bulk (net, without bag allowance), dutypaid or dutyfree, deliverable in customary North Hatteras refining ports.

Only sugar permitted to be processed or consumed without penalty under any quota or allotment plan decreed by the U.S. Government or its agencies qualifies for quotation making.

The Quotation Committee consists of five members of the Exchange. Two are generally selected from refiner-members of the Exchange to represent the buyers' viewpoint, and three from the importing firms and/or brokerage houses to represent the sellers' viewpoint. The Committee follows a rather definite formula, but is not bound by rigid inflexible rules in arriving at its daily quotation. It takes into consideration not only actual sales of raw sugar but also bids and offers received by or known to members of the Committee, and perhaps substantial changes in the price of the nearest active futures month on the Exchange. Sales involving the simultaneous purchase and sale of futures by the parties to the transaction (generally referred to as "AA" trades) are excluded, as well as sales of raws by one refiner to another.

WORLD NO. 11 SPOT

This is a new world sugar contract approved May 1, 1970 by the membership of the New York Coffee & Sugar Exchange. Trading began May 5 for delivery in July 1970 and subsequent months.

It was adopted by the Exchange because of the dramatic increase in the movement of sugar in bulk.

The No. 11 Contract contains provisions which adapt it to the International Sugar Agreement of 1968.

Under the No. 11 Contract, sugar will be deliverable F.O.B. and stowed in bulk. Warehouse deliveries will not be available. Trading months will be January, March, May, July, September and October. Activity may be carried for a period of up to 18 months in the future.

The new contract services the major non-Communist sugar-producing nations. Deliverable growths under the No. 11 Contract are growths of Argentina, Australia, Brazil, British Honduras, Columbia, Costa Rica, Dominican Republic, El Salvador, Ecuador, Fiji Islands, French Antilles, Guatemala, Haiti, Honduras, India, Jamaica, Mauritius, Mexico, Nicaragua, Peru, Republic of Congo (Brazzaville), Republic of the Philippines, Reunion, South Africa, Swaziland, Taiwan, Thailand, Trinidad and Venezuela, delivered f.o.b. and stowed in bulk.

Units of trading and price fluctuation are 50 long tons (112,000 pounds) and a maximum fluctuation of 1/2-cent per pound from the previous day's settlement price, with the exception of Barbados and St. Kitts.

N.Y. TRADING HOURS

Trading hours of the Exchange are:

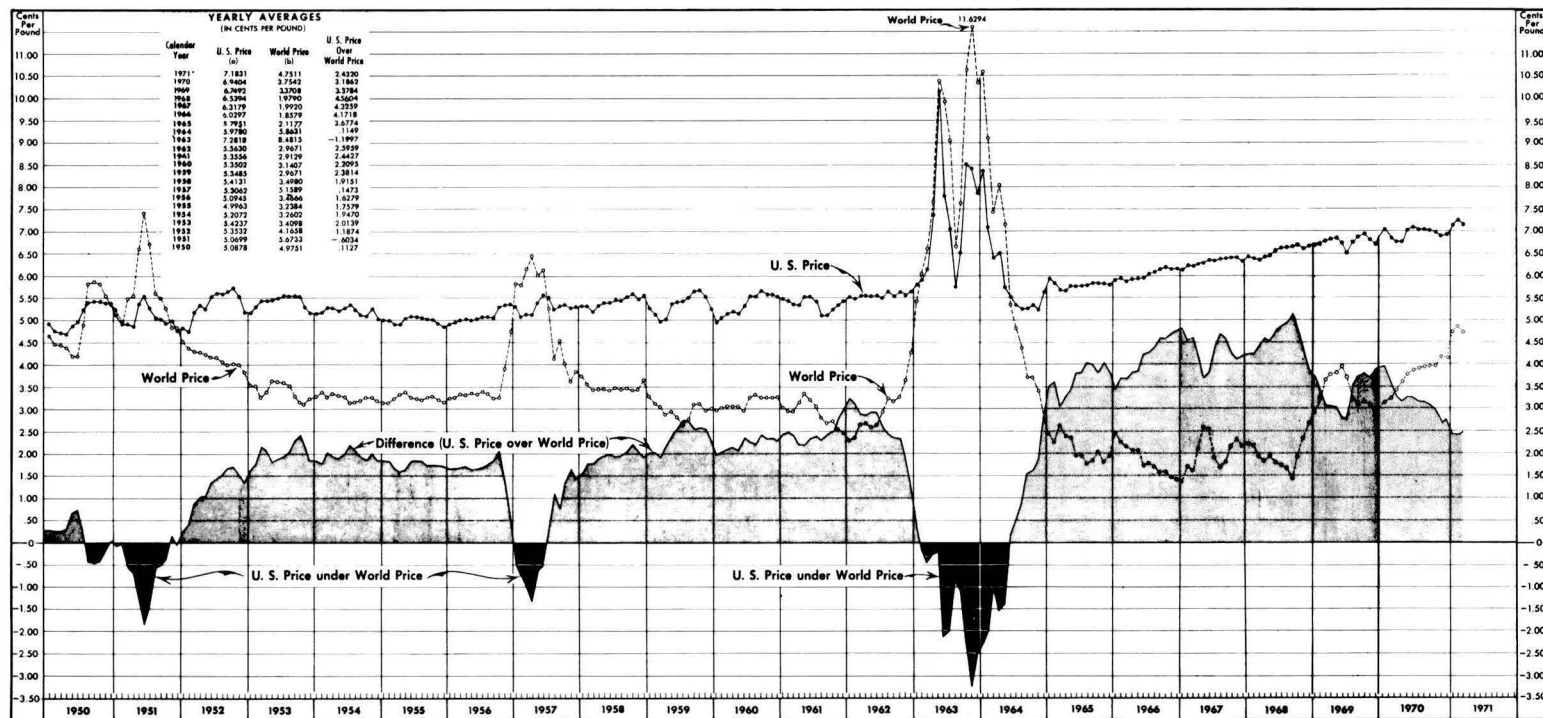
Domestic Sugar Contract No. 10 — 10:00 a.m. to 2:50 p.m.

World Sugar Contract No. 11 — 10:00 a.m. to 3:00 p.m.

LAMBORNS' SUGAR CHART SHOWING COMPARISON OF U.S. AND WORLD PRICE

RAW SUGAR - 96° — CENTS PER POUND

Monthly Averages - 1950-1971*



* To March 31, 1971.

(a) Jan.-Mar. 1971, F.O.B. stored Greater Caribbean including Brazil bulk basis.
1961-1970, F.O.B. stored Greater Caribbean including Brazil bagged basis.
1950-1960, F.A.S. Cuban bagged basis.

(b) Jan.-Mar. 1971, based on No. 11 Contract — F.O.B. stored Greater Caribbean including Brazil bulk basis.
1961-1970, based on No. 8 Contract — F.O.B. stored Greater Caribbean including Brazil bagged basis.
1950-1960, based on No. 4 Contract — F.A.S. Cuban bagged basis.

Source: Lamborn

Part V

MISCELLANEOUS

INDUSTRY RESEARCH & EDUCATION

All elements of the sugar industry support a broad program of research and education through three agencies—

THE SUGAR ASSOCIATION, INC.

SUGAR INFORMATION, INC.

INTERNATIONAL SUGAR RESEARCH
FOUNDATION, INC.

All are non-profit membership corporations organized under the laws of the State of New York. Members include cane sugar refiners, sugar beet processors and raw sugar producers of the continental United States, Hawaii and Puerto Rico. The International Sugar Research Foundation is also supported by sugar companies and associations in Australia, Canada, Great Britain, Belgium, Ireland, Mexico, South Africa. Each of the three corporations has distinct functions to perform.

The Sugar Association, incorporated in 1949, enters into membership arrangements with the various American sugar companies; exercises control and direction in matters of general policy and allocates funds to carry on the work of Sugar Information as well as contributes on behalf of its membership to the International Sugar Research Foundation, Inc.

Sugar Information was incorporated in 1949 to serve the industry's non-research activities, such as educational work and advertising, advocating proper standards for processed foods, and affirming the rightful place of sugar in the diet and as a raw material in industry. In general, its activities are in the non-technical field. It works closely with industrial users of sugar, and with the technical sales services of cane sugar refiners and beet sugar processors. It has developed a notably successful series of publications on sugar.

International Sugar Research Foundation was incorporated in 1943, as Sugar Research Foundation, Inc., for the purposes of increasing knowledge of the rightful place of sugar in the diet, the optimum levels in food products and the potentials of sugar for use for non-food chemical and industrial purposes; all with the objective of increasing the consumption of sugar in ways consistent with the public interest.

Since 1943, 315 research projects have been supported by Foundation grants to educational and other non-profit research institutions and by contract with research organizations.

Food technology is of prime importance because about 98% of all the sugar which is distributed in the United States is consumed as food, and 73% of it is in the form of processed foods, beverages and confections. Research has

demonstrated that many food processors have underestimated the sweetness level, or sugar content which consumers prefer, in for example, canned peaches, dessert cherries, ice cream, peas and whole kernel corn. Sugar has been found to have pre-eminent properties in enhancing the flavor of foods.

The Foundation for some years devoted a substantial part of its available research funds to studies of synthetic sweetening agents, which were being vigorously promoted as substitutes for sugar. Action by the Food and Drug Administration in October, 1969, banned cyclamates, thus releasing funds for more vigorous approaches to research on new markets for sugar.

Research to develop new non-food uses for sugar in the chemical and manufacturing industries is the other major field of work. No major non-food use has matured, but the sugar esters surfactants continue to attract attention for potential commercial production because of the current emphasis on reduction of water pollution. Their potential usefulness in drying oils for surface coatings, as developed by the Foundation's sponsored research, is being assessed. Current policies have placed additional emphasis on providing the research results so that they may be published and be of increasing direct benefit to the major companies.

The change to International Sugar Research Foundation took place on July 1, 1968 and although the purposes remain the same, this now autonomous organization is undertaking steps to become truly international in character. The Sugar Association contributions to the International Sugar Research Foundation on behalf of its members are at the same rate as the international members and are based on individual production figures. The Sugar Association and its members are proportionally represented on the Board of Directors and Executive Committee.

The Sugar Association, Sugar Information and the International Sugar Research Foundation exist for the purposes of serving the industry by learning the truth about its product, by disseminating through education the truth about sugar, and through research, by seeking new uses for sugar as well as increasing sugar knowledge generally. The widespread support that the industry gives to these organizations indicates that they are serving the purposes for which they were founded.

GLOSSARY

BAGASSE: Fibrous residue remaining after sugarcane has been milled to extract the sugar-containing juices.

BLACKSTRAP MOLASSES: The final product remaining after all the commercially recoverable sucrose has been removed from the juices expressed from cane. This is a dark colored, heavy, viscous liquid.

BRIX: The measure of density of a solution, more particularly a solution containing sucrose, as determined by a hydrometer.

CALORIE: Unit expressing the energy-producing value of food. A pound of sugar contains 1,790 calories. A standard teaspoon contains 18.

CHANCACA: Raw sugar in prismatic loaves.

COSSETTES: Thin strips into which sugarbeets are sliced preparatory to the extraction of sugar.

DEXTROSE: A widely occurring crystallizable, simple sugar which contains 6 carbon atoms in contrast to 12 found in sucrose. It is obtained in commercial quantities by the action of acid on cornstarch. It is less sweet than sucrose.

FRUCTOSE: An alternate chemical name for levulose.

GLUCOSE: (1) An alternate chemical name for dextrose. (2) A name given to corn syrups which are obtained by the action of acids and/or enzymes on cornstarch. Commercial corn syrups are nearly colorless and very viscous. They consist principally of dextrose and another sugar, maltose, combined with gummy organic materials known as dextrans, in water solution.

GUR: Cane juice, concentrated nearly to dryness by boiling over an open fire, without centrifuging and with no other purification than by skimming. This ancient process is still used for producing a large share of the sugar consumed in India and some other countries. The crude product is high in glucose and correspondingly low in sucrose.

HIGH TEST MOLASSES: A concentrated, clarified cane juice which has been inverted (usually about 2/3) to prevent sucrose from crystallizing at the high concentrations normally employed.

INVERT OR INVERT SUGAR: This is the mixture of equal parts of dextrose and levulose produced by the action of acid or enzymes on solutions of sucrose.

JAGGERY: Unrefined brown sugar made especially from palm sap (as in India).

KHANDSARI: An open-pan sugar which after boiling is transferred to a clay pitcher and allowed to remain in it until complete crystallization takes place.

LEVULOSE: A highly soluble, simple sugar, also containing 6 carbon atoms. It crystallizes with great difficulty. It is not produced in commercial quantities as such but used in considerable quantities in combination with dextrose and sucrose in invert sugars. It is generally considered sweeter than sucrose.

LIQUID SUGAR: A concentrated solution of refined sucrose or of a mixture of sucrose and invert sugar.

MUSCOVADO: Unrefined or raw sugar obtained from the juice of the sugarcane by evaporation and draining off the molasses.

PANELA: Low-grade brown sugar; generally comes in round chunks that resemble loaves of bread.

PANOCHA: Mexican raw sugar.

PAPELON: Crude brown sugar produced especially in Cuba and Northern South America.

PILONCILLO: An unrefined sugar, especially when molded into cones or sticks.

POLARIZATION: Designated as "pol" and is the value determined by direct or single polarization of the normal weight solution (of sucrose) in a saccharimeter or polariscope. (Based on Spencer and Meade.)

RAPADURA: Raw sugar in Brazil.

RATOON: Second and subsequent crops grown from the root systems of previous plantings of sugarcane. Usually one or more ratoon crops are harvested before the fields are plowed and replanted.

SOFT SUGARS: These are highly refined, dark colored, molasses-flavored sugars which are frequently called brown sugars. They have a relatively high content of mineral and other non-sucrose materials.

SUCROSE: A sweet crystallizable, colorless sugar which constitutes the principal sugar of commerce. Refined cane and beet sugars are essentially 100% sucrose. Under certain conditions sucrose breaks down to dextrose and levulose.

TEL QUEL: Literally, such as (it is). When used describing sugar it means "as made," hence of a polarization usually varying among mills and producing areas.

TURBINADO: Direct consumption raw sugar of high polarization which must be dried in a granulator to a very low moisture content.

SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1969

(To convert to short tons multiply by 1.1023)

(METRIC TONS—RAW VALUE)

<u>Countries</u>	<u>SUPPLY</u>		<u>DISTRIBUTION</u>	
	<u>Production</u>	<u>Imports</u>	<u>Consumption</u>	<u>Exports</u>
NORTH AMERICA:				
Canada	142,980	996,198	1,073,456	15,582
U.S.A.	5,409,004	4,432,044	9,946,614	788
U.S.A. (Mainland)	(3,899,092)	(4,432,044)	(9,800,445)	(788)
Hawaii	(1,071,838)	(0)	(31,800)	(0)
Puerto Rico & Virgin Isl.	(438,074)	(0)	(114,369)	(0)
TOTAL	5,551,984	5,428,242	11,020,070	16,370
EUROPE:				
Albania	17,000 ¹	19,000 ¹	36,000	0
Austria	357,162	0	268,040	0
Bulgaria	175,000 ¹	357,699 ⁴	400,000 ¹	100,000 ⁶
Cyprus	0	16,902	16,824	78
Czechoslovakia	731,500	206,500	660,000	300,284
Denmark ⁸	304,097	8,681	253,333	46,251
E.E.C.	8,111,877	283,762	7,071,296	543,432
Finland	54,542	260,345	220,364	64,323
French Overseas Terr. ¹⁰	0	22,000	22,000	0
Germany (East)	500,000 ¹	222,604 ¹³	640,000 ¹	174,991 ⁵
Gibraltar	0	1,252	1,252	0
Greece	146,166	61,615	179,935	0
Hungary	443,106	15,958	422,190	51,081
Iceland	0	9,995	11,100 ¹	0
Ireland	152,434	36,582	184,015	16,068
Malta	0	12,240	19,000 ¹	0
Norway	0	164,768	171,779	0
Poland	1,722,717	29,722	1,398,391	321,733
Portugal: Mainland ³	0	213,737	219,883	0
Azores & Madeira ³	11,157	1,680	16,220	4
Roumania	465,219	68,261	420,000 ¹	113,153
Spain: Penin. & Bal.	823,273	133,736	873,000 ¹	0
Canary Isl.	0	43,561	40,000 ¹	0
Sweden	208,007	110,244	331,057	36,306
Switzerland	61,532	198,437	343,734 ²	8,913
Turkey	544,922	0	636,458	158,724
United Kingdom	1,006,400	2,248,162	2,936,664	221,306
U.S.S.R.	10,079,000	1,335,059	10,834,438 ²	1,387,667
Yugoslavia	514,132	37,429	567,000 ¹	46,961
TOTAL	26,429,243	6,119,931	29,193,918	3,591,275
SOUTH AMERICA:				
Argentina	973,691	0	883,082	58,098
Bolivia	113,000 ¹	0	107,000 ¹	9,250 ¹²
Brazil	4,173,850 ³	0	3,403,510 ³	1,061,203 ³
Chile	195,000 ¹	117,328 ⁴	335,000 ¹	0
Colombia	708,673	0	521,960	173,495
Ecuador	250,000 ¹	0	130,000 ¹	84,870 ⁵
French Guiana	0	1,200 ¹	1,200 ¹	0
Guyana	388,662	93	31,205	348,435
Paraguay	45,953	0	46,358	280

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
Peru	632,810	0	361,977	267,611
Surinam	14,556	108	11,414	3,865
Uruguay	63,000 ¹	60,188 ⁴	120,000 ¹	0
Venezuela	392,066	0	390,516	26,685
TOTAL	7,951,261	178,922	6,343,222	2,033,792
CENTRAL AMERICA:				
Bahamas	13,482	4,427	4,449	13,482
Barbados	144,952	1,777	16,806	129,233
Bermuda	0	2,818	2,822	0
British Honduras	56,128	1,764	5,243	50,351
Costa Rica	140,000 ¹	0	75,000 ¹	63,704 ⁵
Cuba	5,534,180	0	636,298	4,798,817
Dominican Republic	886,200	0	132,744	636,255
El Salvador	109,439	0	68,180	75,900
Guatemala	177,679	0	115,712	57,227
Haiti	59,000 ¹	0	42,000 ¹	15,802 ⁵
Honduras	55,000 ¹	0	43,000 ¹	2,172
Jamaica	396,957	18,602	94,531	309,155
Leeward and Windward Isl.	37,321	2,500 ⁶	16,430	34,778
Mexico ¹¹	2,563,726	0	1,875,043	625,301
Netherlands Antilles	0	7,394	7,394	0
Nicaragua	125,000 ¹	0	61,000 ¹	61,863
Panama	78,343	0	36,134	38,593
Panama Canal Zone	0	2,400 ¹	2,400 ¹	0
Trinidad and Tobago	247,417	725	50,138	201,397
Virgin Isl. (U.K.)	0	416	415	0
TOTAL	10,624,824	43,283	3,286,199	7,114,030
ASIA:				
Afghanistan ⁹	27,000 ¹	40,275 ⁴	70,000 ¹	0
Brunei	0	4,177 ⁴	4,300 ¹	0
Burma	80,000 ¹	0	70,000 ¹	0
Cambodia	0	10,000 ¹	10,835 ¹	0
Ceylon	10,106	340,630	305,064	0
China (Mainland)	2,700,000 ¹	444,771 ⁴	2,900,000 ⁴	146,511 ⁵
China (Taiwan)	689,023	0	213,133	551,146
Hong Kong	0	131,403	80,723	58,366
India	4,190,050	0	3,122,062	99,297
Indonesia ³	600,000 ¹	100,000 ⁶	755,000 ¹	0
Iran	540,000 ¹	96,159 ⁴	665,000 ¹	0
Iraq	3,423	276,355	310,988	0
Israel	24,470	109,556	159,841	0
Japan	638,618	2,076,586	2,644,028	2,969
Jordan	0	74,039	85,000 ¹	0
Korea (North)	0	206,725 ⁴	150,000 ¹	25,000 ⁶
Korea (South)	0	193,410	188,439	8,559
Kuwait	0	24,523	23,800	9,415
Laos	0	6,324	5,000 ¹	0
Lebanon	10,000 ¹	50,000 ⁶	55,000 ¹	4,934 ⁵
Macao	0	2,518	2,721	0
Malaysia:				
West Malaysia	0	313,331	330,000 ¹	17
Sabah	0	17,947	19,000 ¹	661
Sarawak	0	26,433	27,200 ¹	0

Countries	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
Maldivé Islands	0	5,435	4,500 ¹	0
Mongolia	0	18,113 ⁴	22,000 ¹	0
Nepal	10,000 ¹	5,854 ⁴	23,000 ¹	0
Pakistan	540,917	130,978	596,804 ²	0
Persian Gulf	0	40,830	27,500	0
Philippines	1,578,117	0	626,767	979,586
Saudi Arabia	0	70,729 ⁴	65,000 ¹	0
Singapore	0	180,722	141,242 ¹	20,718
Southern Yemen, Rep. of	0	43,757	34,090	6,229
Syria	30,000 ¹	100,357	115,000 ¹	0
Thailand	324,904	0	324,134	15,666
Timor ³	0	1,159	877	0
Vietnam (North)	0	60,129 ⁴	55,000 ¹	6,849 ⁵
Vietnam (South)	0	142,561	130,435	0
Yemen	0	50,212 ⁴	55,000 ¹	0
TOTAL	11,996,628	5,394,542	14,418,483	1,935,923
AFRICA:				
Algeria	9,980	200,000 ¹	243,352	0
Angola ³	65,738	4	52,499	14,422
Botswana	0	10,562	10,562	0
Burundi	0	3,610	2,882	0
Cameroon	5,358	14,999	14,500 ¹	0
Cape Verde Islands ³	0	4,781	4,154	0
Central African Republic	0	4,002	4,100	0
Chad	0	17,918	21,000 ¹	0
Congo (Brazzaville)	95,283	0	8,532 ²	116,910
Congo (Kinshasa)	39,559	7,089 ⁴	47,826	217
Dahomey	0	11,000 ¹	11,000 ¹	0
Equatorial Guinea	0	850 ¹	850 ¹	0
Ethiopia ⁷	70,373	97	77,514	2,050
Gabon	0	1,800 ⁶	1,900 ¹	0
Gambia	0	6,500 ⁶	7,000 ¹	0
Ghana	10,000 ¹	73,825	78,000 ¹	0
Guinea	0	1,354	13,000 ¹	0
Ivory Coast	0	40,775	42,350	0
Kenya	124,753	28,515	153,401	0
Liberia	0	5,000 ⁹	5,000 ¹	0
Libya	0	73,281	55,000 ¹	0
Malagasy Republic	99,000 ¹	33	44,792 ³	68,448
Malawi	20,094	2,695	27,634	3,177
Mali	5,245	14,550	28,000 ¹	0
Mauritania	0	25,000 ¹	25,000 ¹	0
Mauritius	708,056	27	33,224	626,539
Morocco	117,000 ¹	280,000 ⁹	385,000 ¹	2,000 ¹
Mozambique ³	226,142	0	75,000 ¹	150,000 ¹
Niger	0	8,285	8,500 ¹	0
Nigeria	11,734	77,194	85,000 ¹	8
Portuguese Guinea ³	0	1,847	1,838	0
Rhodesia	120,000 ¹	0	85,000 ¹	75,000 ¹
Rwanda	0	4,686	4,741	0
St. Helena	0	130	225 ¹	0
St. Thome and Principe ³	0	1,000	1,025	0
Senegal	0	60,015	66,500 ¹	27

SUPPLY

DISTRIBUTION

Countries	Production	Imports	Consumption	Exports
Seychelles	0	2,007	2,000 ¹	0
Sierra Leone	0	26,635	27,000 ¹	0
Somalia	50,928	98	49,347	0
South Africa	1,497,634	1,306	858,971	607,975
Spanish Poss. in N. Africa	0	7,823	6,500 ¹	0
Spanish Sahara	0	300 ¹	300 ¹	0
Sudan	87,367	65,218	220,584	0
Swaziland	155,223	0	12,187	144,443
Tanzania ³	92,017	3,290	88,713	22
Togo	0	9,065	11,000 ⁸	30
Tunisia	5,498	105,561	86,957	17,286
Uganda	151,251	0	121,378	54,255
U.A.R. (Egypt)	488,660	111,256	506,747	84,729
Zambia	0	13,600 ⁶	13,600 ¹	0
Upper Volta	33,500	22,335	52,935	0
TOTAL	4,290,393	1,349,918	3,784,120	1,967,538
OCEANIA:				
Australia	2,268,615	0	699,021	1,530,711
British Oceania	0	3,972	3,967	0
Fiji	362,926	260	24,209	336,229
New Zealand	0	151,781	149,564	309
U.S. Oceania	0	5,300 ¹	5,300 ¹	0
Western Samoa	0	3,503	3,650 ¹	0
TOTAL	2,631,541	164,816	885,711	1,867,249
WORLD TOTAL	69,475,874	18,679,654	68,931,723	18,526,177

¹Estimated. ²Calculated. ³Tel Quel. ⁴As reported by Countries of Origin. ⁵As reported by Countries of Destination. ⁶Partly estimated. ⁷Year ending 31st August in year shown. ⁸Includes Greenland. ⁹Year ending 20th March, 1970. ¹⁰Comores, Fr. Terr. of Afars & Issas, French Oceania, New Caledonia, New Hebrides and St. Pierre & Miquelon. ¹¹Change from end-1968 stock is due to the use of a new conversion factor. ¹²January to September. ¹³Partly as reported by countries of origin.

